

scientific colonization of mental deficiency' (p. 261). The invention was, writes Jarrett, 'peddled' with 'enthusiasm' by psychologists and this enthusiasm reflected the psychologists' 'desperation' to be seen as practitioners of an exact science (pp. 261–2). Here the author perpetuates Steven Jay Gould's critical perspective on intelligence testing from *The Mismeasure of Man* (1981). As a narrative this is clear and persuasive. As an explanation of the formation and development of scientific ideas it may, on the contrary, be seen as reductive. Other recent scholarship on the history of intelligence testing tends to indicate more complexity and less enthusiasm involved in the invention and spread of this technology.

That said, this is a well-informed, deeply researched and lucidly written history of the idea of the disabled mind that impresses on many levels. It can be read by the specialist and the curious beginner alike and is strongly recommended for anyone interested in the history of psychiatry, disability studies or the history of racialization.

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Nina R. Gelbart, *Minerva's French Sisters: Women of Science in Enlightenment France*

**New Haven, CT: Yale University Press, 2021. Pp. 360.
ISBN 978-0-3002-5256-9. \$40.00 (hardcover).**

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Nina Rattner Gelbart's new book is a group biography of six exceptional French women and their participation in eighteenth-century science. Elisabeth Ferrand was a superb mathematician who hosted an important salon, championed Newtonian ideas and shaped the thinking of Condillac; Nicole Reine Lepaute, wife of the famed horologist, was an astronomer whose calculations pinpointed the return of Halley's comet and the transit of Venus; Jeanne Barret disguised herself as a man to join Bougainville's voyage around the world and thereby aid her lover Commerson in collecting botanical specimens; Madeleine-Françoise Basseporte's exceptional knowledge was demonstrated in her refined botanical illustrations; Marie-Marguerite Bihéron was the inventor of wax anatomical models, designed to educate women about their bodies; and Geneviève d'Arconville translated and interrogated works on chemistry and did her own experiments on putrefaction. Every one of these women leaps off the page in Gelbart's sympathetic narrative.

Indeed, the author celebrates her identification with her subjects, addressing them by their first names in a series of imaginary 'interludes', letters in which she talks through the shape of their lives and brings them up to date with their resonance in the twenty-first century. Provocatively anachronistic, these experimental 'interludes' underline the stakes for Gelbart's feminist project: to contribute to the visibility of women in science and to celebrate her protagonists' moral qualities, such as perseverance, independence, generosity and courage. Drawing out points of biographical intersection, she imagines her six women as a 'society' of complementary intellects – even if this group never met in reality, 'I have gathered you together in my mind' (p. 259).

For her last book on Madame Coudray, *The King's Midwife* (1999), midwife in the court of Louis XV, Gelbart could draw on an exceptional corpus of letters. In this project, the surviving sources are more fragmentary, a sign, she argues, of the lesser value often attributed to preserving women's things. Gelbart wants to rescue her protagonists from the footnotes and place them at the centre of the narrative, although sometimes such women's actions can only be gleaned through impressions and itineraries of men within their circle. Gelbart knits together different materials with flair and imagination, interrogating the rhetoric of scientific treatises, spotting parallels with other Enlightenment texts and finding poignancy in the material possessions listed in wills and notarial records. In the case of d'Arconville, a recently rediscovered twelve-volume set of manuscript memoirs provides a unique window into her intellectual passions and often gruelling experiences. Since Gelbart frequently alludes to portraits, frontispieces, representations and image making, it is a shame that Yale University Press chose not to include more illustrations, especially of Basseporte's meticulous paintings on vellum.

Minerva's Daughters is pitched as an act of bold historical recovery, undoing the 'erasure' of these women from the history of science. Viewed in such terms, it undoubtedly succeeds, creating richly contextualized portraits of exceptional vitality; although several of these women have already received biographies, it is illuminating to place their lives in parallel and consider them as a cohort. Gelbart correctly points to the masculinist biases that have shaped scientific narratives and institutions, although more discussion was needed of the different processes that obscured these women's achievements. Not all of them were related to their sex. At a time of intense political and intellectual reconfiguration in the 1790s, pensions went unpaid and collections were sometimes dispersed, as in the case of the botanical specimens Barret acquired on her travels with Bougainville, or the anatomical models fabricated by Bihéron. Meanwhile, d'Arconville's outstanding work on putrefaction in the 1760s, which she rightly identified with exposure to the air, was rapidly overtaken by the new language of chemistry introduced by Lavoisier. Such intellectual contingencies and material displacements are endemic in the history of science, although gender doubtless can play an exacerbating role in determining whose story gets told.

This issue matters for Gelbart's characterization of the Enlightenment as 'a period of scientific and institutional malleability that favoured or at least permitted the contribution of outsiders, including women' (p. 260). In a pre-disciplinary, decentred, un-networked scientific world, there were unprecedented opportunities for women, even if, drawing on de Certeau's distinction between 'strategy' and 'tactics', Gelbart argues that these opportunities had to be creatively seized, rather than being granted on principle. The warmth and extent of the tributes paid by Enlightenment savants to their female interlocutors and collaborators are remarkable, whether Condillac's homage to Ferrand as the true author of the ideas expressed in the landmark *Traité des sensations*, or Commerson's invocation of Barret 'armed with a bow, like Diana, armed with intelligence and gravity, like Minerva' (p. 136). Undeniably heartfelt, these tributes were sometimes tinged with condescension or desire, not least in Lalande's veneration of Madame Lepaute, 'sine of the Graces and the tangent of our hearts' (p. 101). Most of these women achieved considerable fortunes and recognition in their lifetimes, with Lepaute elected to the academy in Béziers in 1761, the first woman to enter such a body, and Basseporte given a privileged post at the Jardin du Roi.

What, then, went wrong? Here Gelbart falls back on a conventional villain: the French Revolution. Echoing an older generation of feminist scholarship, Gelbart accuses the Jacobins of instigating the backlash that returned women to the domestic sphere. In the same spirit, she views the Enlightenment as an intellectual insurgency, which 'thrived under an absolutist monarchy that did all in its power to censor and squelch it' (p. 263).

Some scholars might quibble with the hasty characterization of a misogynistic Revolution and an oppositional Enlightenment, just as the claim that half of these women were 'atheists' requires more evidence to convince. In general, their rebellious streak might be overstated: some of them embraced unconventional lifestyles, including living with a female companion, but others refrained from publishing, and d'Arconville in the 1790s ended up denouncing the *philosophes*.

Yet whilst the broader framework can be disputed, the skill and colour with which these biographical portraits have been executed is compelling. *Minerva's French Sisters* is a major contribution to the history of Enlightenment science and culture which, like its subjects, is both audacious and inspiring.

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Christoph Irmscher, *The Poetics of Natural History*, 2nd edn

New Brunswick, NJ: Rutgers University Press, 2019. Pp. 403. ISBN 978-1-9788-0586-6. \$43.95 (paperback).

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The Poetics of Natural History by Christoph Irmscher was originally published in 1999 and is described as a 'groundbreaking, now classic book' in the publisher's synopsis of this second edition. The book follows the central premise that in pre-Darwinian natural history, science and art were not separated into incompatible fields. The act of collecting and displaying (Part One of the book) was in itself a reflection of the collectors, and the exhibits they created were not only meant to instruct but also to create a sense of identity and wonder, something Irmscher equates with art. Furthermore, collectors represented natural history in publications, from letters to travelogues, catalogues and drawings. These representations (Part Two of the book), the author argues, were not just created as scientific records but were intentionally artistic, and can be considered collections in themselves. Irmscher covers American natural history, as the drive to document and collect the 'New World' in particular was closely related to identity, both of the emerging nation and of the individuals who were trying to establish it to cement their reputations.

Irmscher lays these central ideas down in the introduction and then presents the reader with six case studies of men who collected and displayed natural history, sometimes alongside objects of other types. 'Displaying' is made up of chapters concerning John and William Bartram, Charles Wilson Peale and P.T. Barnum. 'Representing' begins with a concept rather than a person: rattlesnake fascination. It continues with John James Audubon's fascination with birds and finally Louis Agassiz's drive to document the entire natural world and prove the fixity of species. The book ends with extensive notes, a selected bibliography and an index, leaving the main content of the book at 292 pages, including twenty-five colour and forty-five black-and-white images. Here Irmscher mirrors his subject very well, the book being a good mix of the scientific and the artistic.