wide range of sources consulted, including diaries, letters, logbooks, newspapers, sketches and memorials. Webb is a fascinating character himself, but we are also treated to a chapter on 'Clerical astronomers' by Allan Chapman and one on 'Webb's telescopes' by Robert Marriott. These give background and also widen the appeal of this book. There is even a chapter on 'Webb's observations of earthquakes' by Roger M. W. Musson of the British Geological Survey, where we learn that Webb was witness to a series of earthquakes centred near Herefordshire and the Welsh borders in the 1880s.

There are a series of chapters on Webb's astronomical work, which included observations of the Moon, planets and comets. Webb discovered ten double stars and the variable star S Orionis. However, his astronomy was very much 'stargazing' – for the pleasure of observing itself, much in the way an amateur naturalist might observe flowers, insects and birds as an appreciation of the natural world in all its forms. Webb's most famous contribution was his book *Celestial Objects for Common Telescopes* (1859). A guide to the skies for serious amateur astronomers, it went through several editions. The philosophy behind the book was appropriate to Webb's profession as a Christian minister, for he regarded the starry skies as evidence of God's Creation and magnificence. If Webb's book was never a mass-market success, it did find a niche in the community of amateur astronomers.

The Stargazer of Hardwicke concludes with a short history of the Webb Society, a group of amateur astronomers devoted to continuing Webb's observational astronomy. There is also a comprehensive bibliography of Webb, including his many contributions to periodicals. On the negative side, some of the illustrations are poorly reproduced. Also, it would have been nice to read further from Webb's observing logs than the extracts provided. Nevertheless, the book is well worth its modest price and will be a fascinating read for anyone interested in Victorian science, whether astronomer or not.

Mark Hurn
University of Cambridge

Libby Schweber, **Disciplining Statistics: Demography and Vital Statistics in France and England, 1830–1885.** Durham, NC and London: Duke University Press, 2006. Pp. ix + 277. ISBN 0-8223-3814-9. £14.99 (paperback).
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In the 1830s the Belgian astronomer Adolphe Quetelet applied the law of frequency of error to people. According to many histories of statistics, Quetelet's revelation that measurements of human bodies followed what we now call a normal distribution inspired the creation of modern statistical tools for studying society. It was not, however, until the work of figures such as Francis Galton some fifty years later that population statistics, in a highly mathematized form, developed into what historians of science recognize as a discipline proper. The question of what happened to population statistics in that intervening half-century is the concern of Libby Schweber's *Disciplining Statistics*. Contrasting the fortunes of two similar mid-nineteenth-century projects – vital statistics in England and demography in France – she traces ultimately unsuccessful disciplinary claims with the overall aim of explaining the factors that shape such activity. A sociologist by trade, Schweber argues that we must explain the emergence of disciplines without overemphasizing the role played by, for example, disciplinary gatekeepers or epistemological criteria. Instead we must recognize people, politics, epistemology and institutions as being interrelated in specific contexts that mould the development of scientific knowledge.

Schweber's account of early attempts to form disciplines around population statistics is divided into four parts, with her two largely separate narratives in chronologically comparative sections. We learn that in nineteenth-century England vital statisticians enjoyed a great deal of success in

promoting their work. They not only gained a foothold in organizations such as the British Association for the Advancement of Science (BAAS), which created a statistical section in 1834, but also came to play an important role in political debate and legislation, particularly regarding public health, as William Farr's guidance of statistical practice at the General Register Office from the late 1830s until 1880 demonstrates. The parallel story of French demography, however, is one with fewer successes to speak of. Demographers were shut out not just from political debates in France, but from scientific ones as well, and their efforts battling these rejections amounted to little.

Why, Schweber asks, were seemingly identical projects greeted in such different ways? Her answer to this question lies in the institutional, political and epistemological consequences of a fundamental difference between France and England in their styles of reasoning about numbers. In France scientific knowledge was seen as providing an exact fit between reality and numbers. Demographers therefore struggled to convince their audiences that the homogeneous statistical population that formed the basis of their work was an accurate representation of society. For example, prominent critics asked what could be learnt from the demographer's figures, such as averages, which had no identifiable physical manifestation. By comparison, the vital statisticians in England were untroubled by these concerns. The English instead made instrumental use of vital statistics in political debates about social issues such as the public health campaigns of the sanitary movement in the 1840s. Consequently the disciplinary activity of vital statisticians was shaped by debates about whether their work was best understood as objective science or as politically motivated opinion.

Schweber's analysis provides many interesting insights into debates during a period when there were few strict boundaries between statistics, politics, political economy and a variety of projects that fell under the general term 'social science'. Her comparative approach successfully highlights the differences between France and England, in terms of politics, institutional arrangements and attitudes towards statistics, and in a way that helps support her argument about the interaction of individual actors and general contexts in the development of disciplines. However, the narrow focus Schweber adopts undermines the flow and force of her argument at crucial points. The problem is most severe when she writes on aspects of nineteenth-century social science that have been the subject of important recent studies. Quite rightly recognizing work such as Lawrence Goldman's on the Social Science Association, Schweber frequently loses her thread as she attempts to explain how the vital statisticians dealt with accusations that their work was unscientific. Whilst accepting that the agenda for statistics was often set in other fields, as other scholars have shown was the case, Schweber fails to explore the significance of this point any further. This neglect becomes most apparent in Chapter Eight, where she addresses an attempt led by Galton in the late 1870s to disband the statistical section of the BAAS. Repeatedly informing us that the course of those events and the context of their outcomes was deeply coloured by political economy, Schweber at no point offers an in-depth analysis of the aspects of political economy to which she alludes. As a result, the sporadic and casual references to people such as W. S. Jevons are likely to be a mystery to everyone but the specialist.

Further to these oversights, Chapter Eight is also home to the most serious error to be found in *Disciplining Statistics*. Concentrating on events at the BAAS in the late 1870s, Schweber attempts to trace a protracted exchange of views between Galton and Farr and their supporters in the periodical press (pp. 182–9). However, one finds that few of the endnotes accurately cite the articles Schweber quotes from. As a result of a wayward use of 'ibid.', anyone wanting to return to the primary source material is faced with the challenge of first figuring out where the referenced passages are really to be found.

On finishing *Disciplining Statistics* one is left with the feeling that, at 225 pages of text, it is ultimately too short to deal comprehensively with its chosen subject matter. Yet overall it must

also be recognized that Schweber succeeds in terms of many of the goals she sets out at the beginning of her study. With the aid of an excellent opening historiographical survey in particular, we are reminded of the issues that divide scholars when it comes to discipline formation. Indeed, Schweber's own argument about how best to approach such subject matter offers many important insights for historians of science to consider.

CHRIS RENWICK
University of Leeds

JONATHAN SMITH, **Charles Darwin and Victorian Visual Culture.** Cambridge: Cambridge University Press, 2006. Pp. xxiii + 349. ISBN 0-521-85690-6. £60.00 (hardback).
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Jonathan Smith's fascinating new book is part of a wider turn to the visual in two related bodies of scholarship on nineteenth-century Britain. Studies of literature and culture have been much influenced by Kate Flint's *The Victorians and the Visual Imagination* (Cambridge, 2000), which argued for the distinctiveness and novelty of the period's attitudes towards sight. In historical writing on the sciences, meanwhile, leading scholars such as Jennifer Tucker and Bernard Lightman have demonstrated the integral involvement of images in the making as well as the communicating of scientific arguments. Surprisingly, Charles Darwin, serviced by a legendary scholarly 'industry', has been largely absent from most of this work. The absence is all the more remarkable given the centrality of the visual to Darwin's evolutionary thought. Accounting naturalistically for the purported perfection of the organ of vision was, after all, pivotal to Darwin's attempt to overturn natural-theological arguments which posited the eye as the ultimate proof of intelligent design. The scrupulous care and attention that Darwin paid to the production of the illustrations in his books also deserves notice. Or consider the crucial difficulty Darwin faced, as Smith notes, of rendering visible the immensely protracted and infinitesimal workings of natural selection. Akin to Gillian Beer's well-known treatment in *Darwin's Plots* (2nd edn, Cambridge, 2000) of Darwin's difficulties and subtle accommodations in employing linguistic resources that implied intention and agency to articulate a theory which disavows them, Smith suggests that the 'existing visual conventions of the natural sciences' which Darwin inherited 'were associated in varying degrees with conceptions of species fixity' (p. 1). As with his use of language, Darwin's response was generally to retain such conventions while subtly manipulating and reworking them for his own particular purposes. Again running parallel with Beer's influential argument that how Darwin said things is a crucial component of his thinking and not just a layer that can be skimmed off, Smith proposes that Darwin's use of such visual materials is not 'merely "illustrative"' (p. 9), or a means of simply representing certain scientific concepts, but is constitutive of those very ideas.

The *Origin* itself, of course, contains only a single illustration, the now iconic abstract diagram that succinctly captures the branching patterns of natural selection. In *Charles Darwin and Victorian Visual Culture* Smith has, for the most part, no choice but to look beyond Darwin's most celebrated work in examining his use of a variety of visual materials in presenting his evolutionary arguments, as well as his complex engagement with nineteenth-century visual culture more generally. This seeming limitation is actually one of the book's chief merits, as Smith ranges broadly across Darwin's career, from his volumes on barnacles in the early 1850s to his final book on worms and vegetable mould some thirty years later, focusing particularly on the botanical publications of the 1860s and 1870s as well as *The Expression of the Emotions in Man and Animals*, where Smith builds on Phillip Prodger's pioneering work on Darwin and photography. As such, *Charles Darwin and Victorian Visual Culture* presents a much fresher, more detailed and wider-ranging portrayal of Darwin than the more *Origin*-centric versions of