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Modern Nature: The Rise of the Biological Perspective in Germany. By Lynn K. Nyhart. (Chicago and London: The University of Chicago Press, 2009. xiv + 423 p., illus., notes, bibl., index. ISBN: 9780226610894)

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L'ouvrage de Sander Gliboff est incontestablement une importante contribution à l'étude de la diffusion des idées darwiniennes et de leur réception par les milieux naturalistes européens.¹ L'attention aux sources et au contexte permet à Gliboff d'éviter les écueils positivistes ou « *whiggish* ».² Gliboff donne d'utiles outils pour appréhender le contexte allemand et corrige plusieurs idées reçues de façon salutaire. Le chapitre IV offre des réflexions fondamentales sur ce que c'est que *recevoir* : la réception d'un ouvrage ne se fait pas dans la passivité d'individus uniformes (par exemple : les morphologistes allemands, enfoncés dans un récapitulonnisme dogmatique et attendant consciencieusement la dictée de Darwin) ; elle implique une diversité d'acteurs eux-mêmes en recherche et en débat sur leurs concepts et leurs méthodes (par exemple : sur la forme, le développement, l'histoire ou la succession des formes). Bronn ou Haeckel, eux-mêmes experts des sciences naturelles, mobilisèrent de façon sélective et créative les ressources offertes par *L'Origine*, pour résoudre leurs problèmes théoriques et avancer dans leur questionnement sur les opérations de la nature.

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***Modern Nature: The Rise of the Biological Perspective in Germany.* By Lynn K. Nyhart.** (Chicago and London: The University of Chicago Press, 2009. xiv + 423 p., illus., notes, bibl., index. ISBN: 9780226610894).

The history of nineteenth-century German science can be told as *the* story of nineteenth-century science: the rise of the research university and the research scientist; the making of the PhD mill, with Justus von Liebig's in Giessen as the exemplar; the massive development of science-based industry, first in the chemical industries and by the early twentieth century in the electrical industry, industries that played their part in national and imperial ambitions. Analogues may be found in other national contexts, but elements of such a story are peculiar to the German context, notably the mandarin culture and *Bildungsbürgertum* of the nineteenth-century German professoriate, a class that preferred cultural prestige to political engagement.

1. Un sujet sur lequel Pietro Corsi a maintes fois attiré l'attention des historiens. Cf. « Before Darwin. Transformist Concepts in European Natural History », *Journal of the History of Biology* 38, 1 (2005) : 67-83.

2. L'étude ancienne d'Yvette Conry, *L'introduction du darwinisme en France* (Paris : Vrin, 1974) est exemplaire de ce travers, notamment dans son traitement de la traductrice française, Clémence Royer. Conry concluait à « la non-introduction » du darwinisme en France, mais on a pu lui répliquer qu'il était impossible d'« introduire » une pensée où que ce soit, dans toute sa pureté.

There is much in such a story that is unobjectionable, but one might balk at its teleological character, which moves seemingly irresistibly from the Second Scientific Revolution to the *Sonderweg*. There are other ways of doing the history of German science, as Lynn Nyhart demonstrated in *Biology Takes Form: Animal Morphology and the German Universities, 1800-1900* (Chicago, 1995), a valuable study of the intellectual and institutional history of morphology. In *Modern Nature* Nyhart does something radically different: she turns to science as it was practiced outside of German universities, uncovering an extraordinary range of hands-on “practical” natural history and nature studies done by taxidermists, museum curators, and school teachers, from the mid-nineteenth through to the early twentieth century. This was science in the “civic realm” and its practitioners more often than not were of lower class backgrounds and had to struggle mightily to attain bourgeois respectability, for what it was worth. *Modern Nature* is very much a book about “popular” science, but it is also a book about much more than popular science.

Recent years have seen much important work on popular science, with the exemplary books of Bernie Lightman and Jim Secord being but the tip of a large body of scholarship on Victorian popular science; lingering notions that the world of German *Wissenschaft* was too austere for popular science were dispelled by Andreas Daum’s groundbreaking book, *Wissenschaftspopularisierung im 19. Jahrhundert* (Munich: Oldenburg, 1998). The scope of *Modern Science* is at once more limited than science writ large, focused as it is the “biological perspective” (*biologische Betrachtungsweise*), and more ambitious than, say, a cultural reading of museum “display,” for one of its multiple aims is to show how science in the civic realm contributed to elite scientific research. This was not science trickling down to the people, but rather the biological perspective of the civic realm “trickling up” or from the “outside-in” to the research universities. Nyhart describes this with some understatement as “highly unusual in the history of scientific ideas, especially in German science” (p.18).

In the early twentieth century the biological perspective “viewed the organism as a living being embedded in nature, whose survival depended on its ability to interact successfully with both its physical environment and the other organisms around it” (p.2). The crucial concept in this perspective was that of “biological societies” or “biological communities” (yes, these were *Gesellschaften* and *Gemeinschaften*, though here more as synonyms) developed in the 1870s by Karl Möbius, the most prominent of the many actors in *Modern Nature*. The biological perspective was concerned with form, function and environment; it always included humans; it placed emphasis on geography, and it was the conceptual foundation of the German view of ecology, especially animal ecology. The geographic and ecological aspects of the biological perspective offered a

vibrant and complex view of nature, represented by museum displays of groups of animals in lifelike settings. Such displays contrasted with the dry-as-dust world of systematics and taxonomy, and the endless displays of individual specimens in glass cases. By the 1920s ecology, particularly animal ecology, had become an academically sanctioned science, but its origins lay in the civic realm and the biological perspective.

Such a brief restatement of the intellectual trajectory of *Modern Nature* cannot do justice either to the social, institutional and cultural history that are integral to its argument, or to the broad range of evidence marshalled in support of its many claims, or to the many actors that enliven its pages. Figures such as Phillip Leopold Martin, who had humble beginnings in taxidermy and overcame financial and other challenges to make a mark as a museum reformer, zoo-designer and nature protectionist, are here rescued from historical obscurity. There are many pleasant surprises in this book. One might expect that the concept of a biological community originated in a study of forests, say those of the Harz Mountains or the Black Forest, but this was hardly the case. It was in a detailed, quantitative monograph based on research in the Kiel Fjord, *The Oyster and Oyster Culture*, that Möbius introduced his major theoretical concept of biocoenosis, or living community. In the last third of the nineteenth century Kiel experienced a population boom, thanks largely to its shipbuilding industry (for the navy) and the railway, complete with the accompanying social dislocation and environmental pressures, including on its oyster fisheries. The living community concept resonated in German society, which was undergoing the tensions between a stratified, antiquated social order and a modern liberal society characterized by social mobility based on achievements. The Kiel school teacher Friedrich Junge introduced Möbius's living community concept to other teachers, linking its ideas of nature to the pedagogical goals of character building and citizenship. The route from oyster culture to civic identity also was bound up with the *Heimat* movement and *Heimatkunde*, the study of "homeland" that worked at local, regional and national scales of identity and culture. *Heimatkunde* was but one of a series of "kunde" or popular studies that encompassed subjects as diverse as folklife, ethnology, local archaeology, book connoisseurship, and ocean studies, all of which aimed to be of serious, general interest. *Modern Nature* establishes a deep connection between the making of ecology and the creation of German national identity through to the 1920s.

The almost complete absence of girls and women in *Modern Nature* is noteworthy. The museum workers are often described as "museum men," and the ones mentioned are all men. Junge was the teacher of a Girls School, so the living community was not something reserved for boys and men. In her concluding remark Nyhart observes that unlike the United

States, where there is a history of gendering nature study as feminine sentimentalism, in Germany the love of nature was viewed as a national character trait. Perhaps more to the point, in the US women dominated teaching in the late nineteenth century, especially elementary education; in Germany, men dominated the profession, including at the elementary level (p.362-3). Despite this, one of the only women mentioned in this book, Helene Sumper, co-founder of the German Women Teacher's Association, extolled the virtues of the living community (p.182). Here is an area where much work remains to be done.

The worries about modernism, *Heimat*, identity and industry strongly suggest that the biological perspective could be deeply insidious. One suspects that it must have found its way into discourses of race and heredity that were becoming every more prominent in early twentieth century Germany (and elsewhere). But these are matters for other books. Nyhart has, wisely, chosen to avoid a simple, unidirectional reading of history. The biological perspective had many trajectories and has "left behind a legacy of multivalency, accommodating diverse ways to appreciate and live with nature" (p.368). Anyone doing the history of nineteenth and twentieth century German science, culture or ideas who ignores *Modern Nature* does so at their peril.

Modern Nature is also required reading for historians of ecology, museums, zoos and popular science, really for any historian of science, including those who study the history of science in Canada. Geography and place are crucial part of *Modern Nature*, as they are in Canadian history, and I warmly recommend this book to all readers of *Scientia Canadensis*.

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***Weather by the Numbers: The Genesis of Modern Meteorology.* By Kristine Harper.** (Cambridge, Mass.: MIT Press, 2008. ix + 308 p., notes, bibl., index. ISBN 978-0-262-08378-2 hc. \$40.00).

Harper's book sheds light on a critical chapter in the history of meteorology, as numerical weather moved from the realm of theory to practice, thanks to the rapid development of computer technology and the post-war mood in the United States. Scholars will undoubtedly welcome Harper's contribution to the history of meteorology and climate science, an area where, despite several important works in the past five years, well-defined case studies and focused analyses are still relatively sparse. The book also provides critical new insight into the inner workings of military-civilian partnerships and into the professionalization of a scientific discipline.