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in the Humanities & Social Sciences



Kendra Smith-Howard. *Pure and Modern Milk: An Environmental History since 1900.* New York: Oxford University Press, 2013. 240 pp. \$34.95 (cloth), ISBN 978-0-19-989912-8.

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In *Pure and Modern Milk*, historian Kendra Smith-Howard follows the ebbs and flows of milk from landscape to cow to consumer and back again. Through its five roughly chronological chapters and epilogue, the book considers the many ways humans have managed milk during the twentieth century to ensure both its safety for consumers and its economic promise to farmers. Each chapter carefully considers how perceptions of nature, science, and technology altered approaches to milk production through different periods in America's history. Unlike other histories of milk, Smith-Howard's work reflects thoroughly on the materiality of the fluid, the cow it comes from, and the human technologies mediating it. These considerations illustrate the challenges regulators, farmers, processors, and consumers faced to keep milk "pure" through techniques such as pasteurization and technologies such as refrigerated milk tanks. The book forces readers to question the ways milk has been made "modern," and how some technologies of modernity—including antibiotics and pesticides—created more problems than solutions in the US food system. As convincingly shown in Smith-Howard's epilogue, these past problems continue to feed into public perceptions of milk today.

The book purports to accomplish four ambitious aims. First, it seeks to catalogue environmental change due to rural industrialization. The most poignant examples Smith-Howard offers in her book explore the integration of new technologies onto family farms. This is representative of larger national shifts in urbanization, industry, and science. Yet, a feature of wide-sweeping narratives such as *Pure and Modern Milk* is to leave the

reader yearning for more. A focus on the East Coast and Midwest helps the reader understand how some farm families were affected by these changes, but it neglects the very different kind of industrial development that occurred on dairies on the West Coast. There were too few examples from California for a hearty comparison. Moreover, the discussion of rural industrialization does not leave much room to consider technological resistance from different kinds of farmers across the United States over this long period. These farmers included the Amish, who modified many of the practices that Smith-Howard describes to fit their religious way of life.

Smith-Howard's second aim is to demonstrate the "delicate interweaving" of nonhuman nature with human technologies through the case study of milk (p. 8). She cites Richard White's concept of the "organic machine" and Edmund Russell's "garden in the machine" to illustrate this point, but she could very well have called her analysis "envirotechnical" [1]. This exploration is the strongest aspect of the book, and it resonates clearly in every chapter. It is also the greatest intervention made by Smith-Howard in the existing milk history literature. Because of her careful attention to urban and rural—as well as human and nonhuman—mediation of milk production, distribution, and consumption, Smith-Howard is able to describe how different actors influenced one another and changed regulations, dairy products, cow bodies, and rural landscapes throughout the twentieth century.

Among the exciting examples the author showcases for her second aim, the cases that demonstrated changes in breeding and feeding cattle were the most unique.

Though other sources have focused on the importance of artificial insemination (AI) technologies for the larger history of science,[2] Smith-Howard locates the development of AI on the farm as an economically significant practice that ultimately aided in the increased production of milk in America. The author is also sensitive to include details about the shifts made in housing and feeding dairy cattle to produce more milk. Her incorporation of long-standing publications used by everyday farmers, such as *Hoard's Dairyman*, brings their decisions into fuller relief. The use of such sources is a welcome contribution to the American history of milk.

A third aim of the book is its promise to cover the many ways Americans came to conceptualize milk's "purity" based on its relationships to human technologies and to nonhuman nature. Historians of medicine, in particular, will benefit from reading these examples and pondering the complicated interrelationship between ideas of "purity" and "health." Smith-Howard traces the concept of purity from the Progressive Era's regulatory structures to the consumer-driven definitions of postwar environmental movements. Historians of medicine will also benefit from the author's contribution to the history of antibiotics through the use of this "purity" analysis. One interesting narrative thread includes how antibiotics were differently viewed as part of the milk supply. Farmers distinguished between unhealthy animals and their milk and believed antibiotic residue to be a non-issue due to pasteurization practices. Veterinarians who worried about their professional authority and food processors who noticed stark milk quality shifts were some of the first professional groups to voice concerns about antibiotic use in the 1940s and 1950s. Through these examples among others, Smith-Howard convincingly shows that "pure milk" is a messy and historically contingent idea that has relied on, and been reinterpreted by, different technologies used on and off the farm.

The author's careful curation of a large sweep of specific examples limits space that could have been devoted to other forms of analysis one might expect from an environmental history of milk. Though the book thoughtfully relocates milk's history back onto the family farm, farm women are less visible than female dairy consumers in the narrative. This is most likely due to Smith-Howard's fourth goal for the book: to show how consumer perceptions of milk came to impact the agricultural practices producing it. Related to these consumers, there are some significant contributions scholars of gender will appreciate from this text. It showcases some beautiful images and advertisements featuring women in the marketing of

new products, such as skim milk, to wives and mothers. However, it is telling that when Smith-Howard mentions skim milk advertisements in both women's magazines and *Hoard's Dairyman*, her analysis ends there (p. 83). Though she emphasizes the practices and perceptions of "farm families," farm women predominate in many of the on-farm images used in the book (pp. 41, 110). This reader wondered about these women and their representations and expectations as they worked with cows across this timeline.

The break-down and format of its chapters make *Pure and Modern Milk* a comprehensive secondary source that scholars interested in the case of milk will return to again and again. Smith-Howard gracefully moves across multiple topics and regions, taking the time to illustrate the call-and-response held between urban and rural areas, producers and consumers of milk, and the federal interventions mediating many of these relationships. Considering its vastness compounded with its brevity, this book may disappoint scholars most interested in the intersections of "environment" and "health," given how little attention is paid to the material changes in soil and pasture. Aside from more developed sections that address changes in manure production and management, tilling, no-tilling, soil fertility, and soil erosion—all topics related to making animal feed—have little presence. And though the contributions of feeding and breeding are a testament to the unique contribution this book makes, it was surprising to see only brief mention of how these changes affected the health of cattle, aside from increased mastitis risk. More attention is afforded to human than non-human health in the text.

Overall, *Pure and Modern Milk* is a fantastic source for anyone interested in learning about the intricacies of the envirotechnical systems of milk. Each chapter stands alone as a compelling case study for a particular moment in American history, and the writing is easily digestible for undergraduates. The first chapter covering the Progressive Era, in particular, would be appropriate for courses covering public health, food history, environmental history, or the history of technology. Smith-Howard has created an invaluable book that will inspire early career scholars to think ambitiously about the intersections of the history of technology and environmental history. The work will be a resource for graduate students crafting projects that showcase commodities, particularly considering that it was edited from a dissertation. The selected bibliography of primary sources alone will inspire scholars to reconsider using different types of sources to shape their historical narratives. The list

is a testament to Smith-Howard's skill for using unique materials together, including agricultural displays, oral histories, advertisements, and land grant publications. Given these many qualities, *Pure and Modern Milk* is a book that will be returned to and adored as a multifaceted illustration of this beloved and controversial American commodity.

Notes

[1]. This considers the work of scholars asso-

ciated with the Society for the History of Technology's Envirotech Special Interest Group. See, for example, Sara B. Pritchard, "An Envirotechnical Disaster: Nature, Technology, and Politics at Fukushima," *Environmental History* 17, no. 2 (2012): 219–243, doi:10.1093/envhis/ems021.

[2]. A more recent example includes Margaret Derry, *Masterminding Nature: The Breeding of Animals, 1750–2010* (Toronto: University of Toronto Press, 2015).

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