



Weaver, Lawrence Trevelyan, White Blood: A History of Human Milk.

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he seems to have selected a wide enough array to satisfy even the most reluctant would-be mariner.

At its heart, *The Sailor's Bookshelf* is a series of short book reviews on fifty chosen titles that Stavridis considers relevant to understanding the sea. He notes in the introduction the three loves of his life: family, reading, and the ocean herself. He combines the latter of these two in this work, whose target audience is the extended family of his naval service members and those who might share his passion for the sea. The book is divided into four sections, the first of which concentrates on describing the sea, and the second discusses the brave men and women who have explored the unknown expanse of the world's oceans to discover the world we know today. The last two sections explore specific personalities in works of fiction and nonfiction. The central factor in all of these reviews is not only the work's connection to the sea, but also its resonance with Admiral Stavridis himself and his own personal experience.

It is unsurprising that the largest selection of works involves people. Stavridis recommends thirteen titles in his first section to help readers know the ocean. Several titles describe the art of navigation, which serves as a metaphor for the remainder of the work and an individual's life in general. Eight titles describe exploration and the courage that must be required to sail unknown waters. Here, Stavridis highlights the struggle against the sea. Although the sea is not evil, she is a constant companion, and one who demands preparation and consistent vigilance. The remaining twenty-nine titles address individual stories and personalities, demonstrating Stavridis's ultimate connection with and compassion for people.

Stavridis succeeds in two aspects with this work. His main purpose is to acquaint the reader with books that capture the essence of the sea. On this score, *The Sailor's Bookshelf* is a resounding success. For the unabashed bibliophile, Stavridis's inclusion of

Moby Dick and *The Old Man and the Sea* is refreshing to see, but the reader will also find titles that cover military conflicts from ancient to modern times, works that celebrate the intrepidity and courage of explorers, treatises on the fragile biology of the sea, and works investigating gender and racial issues related to the sea, as well as stories of some of the most influential mariners in history. Old sea dogs will likely be reintroduced to a familiar title but will almost certainly discover a title covering an aspect of the sea they may not have considered. Those readers less familiar with the sea will find many a title here to capture their attention and justify their amazement at the limitless ocean.

The second aspect of this work's success is Stavridis's review of each title. Each review is connected to his life and career afloat in a special way, which he lovingly details on the page. His first oceanic voyage as a child cemented the Atlantic in his memory. His first cruise as a young ensign did the same for the Pacific, while also introducing him to Captain James Cook and his voyages of discovery across the mightiest of the world's oceans. It is in the story of *Mister Roberts* (Thomas Hegggen, Houghton Mifflin 1946) that Ensign Stavridis learns the benefit of effective mentorship, which he personally has tried to exhibit throughout his own career. His connection with the Naval Academy at Annapolis is discussed though several works, but none more clearly than *Sea Power: A Naval History* by E. B. Potter (Prentice Hall 1960). Potter taught a class that Midshipman Stavridis sat in, and it made a lasting impression on him—so much so that one of Stavridis's own books shares a portion of that title. Each story, told in loving, succinct detail, fully communicates how the work impacted Stavridis's personal and professional life, but they also make the entire work a journey of discovery and a joy to read.

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Weaver, Lawrence Trevelyan
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Perfection as a concept or a product is not typically a topic historians address in the secular realm. We glibly state that nothing is perfect. Yet, perhaps, there is one human, biological product that is perfect, at least for the first six months of a human life: mother's milk. Indeed, breastfeeding for much of human history has been considered best for infant health and growth. In *White Blood: A History of Human Milk*, Lawrence Trevelyan Weaver attempts to tell the story of how human milk has been understood and, to a lesser degree, how babies have been fed from ancient times to the present. Weaver's thesis is simple: human milk over the last two millennia has always been conceived in terms that reflects the zeitgeist of the time.

After offering a primer on biology, reproduction, breast milk, and infant feeding needs, Weaver, a physician, professor of child health, and honorary senior research fellow in the history of medicine at the University of Glasgow, explores the dominant and persistent humoral theory about human milk from pagan ancient Greece through Christian medieval Europe. In the ancient world, the writings of Aristotle and Galen, for example, were synthesized, later, in the Christian thought of Clement of Alexandria, who believed that "vitalised blood" (32) was the substance from which the fetus formed, and that this same blood, one of the humoral substances, was transmutable in the breast to become milk, or "white blood," which was further transmuted into flesh. Breastfeeding was considered the best practice for feeding; a wet nurse was a poor, but often used, substitute for mother's milk. Hand-feeding was, essentially, a death sentence for the newborn.

Humoral theory increasingly fell out of favor in the Renaissance and early modern Europe, as alchemy and

corpuscular theory captivated intellectuals trying to understand the “momentous transition from one vital fluid to another” (114), from blood nourishing the fetus to milk nourishing the infant. Paracelsus in the early sixteenth century, Weaver argues, articulated this change in thought, viewing the body as a “chemical laboratory” (70) and a site of metamorphosis where blood from the womb would be whitened as it travels to the breast. Later, William Harvey and Robert Boyle would further new corpuscular theories that held that “nutrition and generation were governed by fermentations” (95) and that milk was a “corpuscular fluid with vital properties” (101).

Though metaphors for milk changed over time, little did these changing ideas help the health of infants, at least until the Enlightenment. In the eighteenth century, Weaver argues, new attention was paid to the unhealthy material conditions that infants experienced in the growing European cities, especially London and Paris, where there were high rates of child abandonment and overflowing foundling hospitals. Wet nurses were overwhelmed, underpaid, and only regulated in France. In addition, all children suffered when weaned, when solid foods were introduced to the infant at roughly six months of age. At this time, high infant mortality rates were increasingly understood from a new “chemico-mechanical model of digestion” (145), and less from unbalanced humors,

and, thus, children became subjects of pathology studies. The quest would now intensify to concoct or discover digestible “alternatives to human milk, and weaning foods” (145).

Public health measures improved immeasurably in the nineteenth century, especially after mid-century, but infant mortality rates stayed intractably high. There were still no salubrious alternatives to mother’s milk and the traditional weaning foods. Food, though, was now understood in terms of nutrients and chemistry. This idea underlay a revolution in feeding, for better and for worse. Indeed, in 1867, Justus von Liebig, a chemist, marketed his baby food based on food science, “setting in motion an infant food industry” (202). Henri Nestlé would follow with his own baby food formula, and the market soon exploded with patent foods, most variations on diluted cow’s milk and added nutrients.

In the twentieth century, infant feeding was subject to increased scientific inquiry, and diseases, such as rickets, were seen as originating in nutrient deficiencies. Food companies improved their formulas according to this research and soon claimed that their products were similar to breast milk: “Nature was no longer the supreme guide to how to feed babies” (241). Though it solved many problems, bottle feeding also generated new ones. Today, the quest persists: to make the “perfect alternative,” the “perfect formula” (257) to that which already exists. The story of white

blood, human milk, is, thus, a story of humans, once again, trying to improve on nature, when nature does just fine—and is perfect.

White Blood is an interesting survey over a wide space of time of men’s quest to understand a central problem of human existence: gestation and nutrition. The book is richly illustrated, informed, and a useful primer for understanding the change in ideas in the history of science and health over time. It is not, however, an especially satisfying academic work. First, it has no footnotes and inadequate time markers. In addition, this work of largely intellectual history subordinates the voice of women, who only appear a handful of times, despite subject matter that one would think deserves women’s voices. In addition, although Weaver does a fine job of showing how human milk was understood in terms of the zeitgeist of the age, he does not adequately analyze the historical contexts of the thinkers he highlights. What is, thus, underdeveloped is the curious problem of men and corporations trying to improve on what women have naturally been doing since the development of our species, breastfeeding and giving life, nurturing the very gender that would try to supplant and gain control over their unique, perfect, natural role and gift of evolution.

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