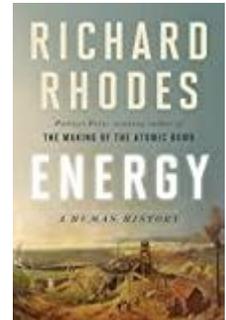




Richard Rhodes. *Energy: A Human History.* New York: Simon & Schuster, 2018. Illustrations. 512 pp. \$30.00, cloth, ISBN 978-1-5011-0535-7.



Reviewed by Rachel Lanier Taylor (University of Washington)

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Commissioned by Daniella McCahey (Texas Tech University)

Richard Rhodes's *Energy* follows the human successes, failures, and connections that have shaped historic transitions between energy sources. The book is divided into three roughly chronological sections. The first, "Power," begins with Elizabethan era concerns regarding the use of wood as a source of heat. Its necessity in maintaining the Royal Navy led to a growing reliance on coal. Innovations to aid in the resource's removal from and transportation around the earth followed. In "Light," various combustible liquids and gasses—including the processed blubber of sperm whales—and their ability to produce light are considered. Electricity falls, from Niagara, under this section as well.

At last, in "New Fires," Rhodes focuses on nuclear energy, addressing natural gas and renewables to a lesser extent. The uneven attention that nuclear power receives is perhaps unsurprising given that Rhodes won a Pulitzer Prize for his earlier work, *The Making of the Atomic Bomb* (1986). This section differs from the first two. It is prescriptive in nature, defending nuclear power

as a necessary and important part of the response to global warming. Despite "its few occupational accidents," Rhodes argues, "its limited air pollution combined with its extremely low greenhouse-gas emissions and its 24/7 availability more than 90 percent of the time make it easily the most promising single energy source available to cope with twenty-first-century energy challenges" (p. 336). Some of the assertions he makes in defense of nuclear energy could be further explored or complicated, particularly the effects of uranium mining, current political divisions on the issue, and the economic costs of its production.

Covering over four centuries, the book moves quickly. Chapter 13, with the remarkable title "An Enormous Yellow Cheese," follows the transition of "urban manure"—the result of horse-drawn transportation in cities—from useful by-product of city life to "expensive nuisance" (p. 215). In just over ten illustrated pages, Rhodes addresses Peruvian guano and its role in setting the world on a track toward synthetic fertilizer, developments in sanitary science, and the growing scientific and

cultural knowledge surrounding vectors of disease. He addresses the Irish potato famine, Alexander von Humboldt, Humphry Davy, Frank Julian Sprague, and the introduction of the electric streetcar. Here, Rhodes succinctly engages broader historical trends while introducing several avenues of further exploration through brief and connected biographical accounts of “paragons” of energy history (p. xi).

The human-level scale at which he considers transitions from wood to coal, coal to oil, and on to the energy mix of today is a strength of *Energy*. His human focus is inviting to a popular audience and avoids the “esoteric” and “technical” tone that debates surrounding climate change tend to take (p. xiii). The connections, tragedies, successes, and failures of the scientists, inventors, and engineers he follows show how small-scale and very human experiences have shaped the history of energy. For instance, he recounts how James Watt’s daughter’s fight with consumption led him to work on a pneumatic machine with physician Thomas Beddoes. Beddoes’s machine was unable to save Watt’s daughter, but following her death he continued to work on the new technology. The apparatus Watt created was “essentially identical to a gaslight generator” (p. 116).

Most of the stories Rhodes relates are less tragic. Particularly intriguing is William Shakespeare’s connection to the history of energy. With the Burbage brothers, the playwright stole a theater—the entire building—and used the pilfered lumber to construct the famous Globe Theater. With England’s forests dwindling from the extraction of wood for fires, such recycling was a more affordable option than transporting lumber from remaining distant forests. Arie Haagen-Smith’s story of pineapple essence and smog is an equally fascinating read. While these human-level stories of energy transitions are a strength of the book, they also reveal a blind spot. The humans in this history are mostly male and Western.

In a recent roundtable on energy transitions, Ian Jared Miller and Paul Warde observed that changes in energy source and system “are not unlike other historical processes: often fitful, uneven, and frequently contradictory.”[1] Shifts are a complicated mix of social, political, cultural, environmental, and, as Rhodes shows, very human factors. *Energy* does not engage with academic discussions that trouble the idea of transition, questioning whether it hides continuity or assumes too easy a forward movement, but this is not Rhodes’s intention. He writes for the broader public, and avoiding debates that may alienate his audience is part of his objective. The connections Rhodes explores between individuals and energy technologies as well as his bibliography, however, could prove useful to an academic audience.

Note

[1]. Ian Jared Miller and Paul Warde, “Forum: Energy Transitions as Environmental Events,” *Environmental History* 24, no. 3 (July 2019), 464.

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