

12-2020

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Citation of this paper:

MacDougall, Robert, "Dark Enlightenment" (2020). *History Publications*. 393.
<https://ir.lib.uwo.ca/historypub/393>

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Review of Jeremy Zallen, *American Lucifers: The Dark History of Artificial Light, 1750-1865*.

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Final Pre-Publication Draft

Cite as: Robert MacDougall, “Dark Enlightenment,” *Reviews in American History* 48:4 (December 2020), pp. 522-530.

[Published page numbers appear in brackets below.]

DARK ENLIGHTENMENT

Robert MacDougall

Jeremy Zallen, *American Lucifers: The Dark History of Artificial Light, 1750-1865*. Chapel Hill: The University of North Carolina Press, 2019. 356 pp. Notes, bibliography, and index. \$34.95.

One of the underrated pleasures of Herman Melville's *Moby-Dick* is how gory it is. Even when the plot is becalmed by long digressions on cetacean taxonomy, one is rarely more than a few pages from a detailed description of either a whale or a whaler's demise. There were many gruesome ways to die on a nineteenth-century whaling voyage, and Melville cataloged them all with enthusiasm. "For God's sake," he exhorted his readers, "be economical with your lamps and candles! not a gallon you burn but at least one drop of man's blood was spilled for it."¹

Jeremy Zallen's *American Lucifers* is an ambitious, enthralling history of how Americans and others produced and consumed those lamps and candles in the century before electricity. Viscerally imagined and exhaustively researched, *American Lucifers* combines environmental history, energy history, the history of labor, and the history of capitalism to trace the routes and processes by which lamps, oils, candles, and matches were made. It might best be described as a commodity history in which the commodity is light. But it illuminates a host of other topics, many of them dark.

For while light would appear the most immaterial of commodities, Zallen's book is relentlessly physical. It begins with the New England whalers who chased whales across the planet for the fat stored in their bodies, then boiled that blubber into oil for lamps and candles, the first illuminants produced at industrial scales. Zallen's account of the whale fishery is no less gory than Melville's, though knowing it is nonfiction dilutes the reader's pleasure—and that is only his first chapter. He goes on to map the production of camphene and kerosene, lard lights made from hog fat, gaslight made from coal gas, and phosphorus "lucifer" matches. Each new development in the industrial production of artificial light seems to have been more dangerous and punishing to its

workers than the last. Zallen chronicles the violence with such thoroughness that whaling comes to seem the safest job available in the industries of light. In the pages of *American Lucifers*, working people are burned alive by [p. 523:] camphene lamps, burned alive by kerosene lamps, burned alive in mining accidents and tenement fires. Others are buried in cave-ins, drowned at sea, or suffocated by methane gas. Still others are shot, whipped to death, hanged on the gallows, or run through with cutlasses. Some fall to their deaths; some leap to their deaths to end their torture. And these are only the quick ends. Many, many more suffer the slower violence of simply being worked to death in North Carolina turpentine camps, Manchester match factories, Jamaican sugar plantations, or Peruvian guano islands—Zallen’s research, and the carnage it reveals, are both impressively transnational.

The gore is not the whole point, but it is not beside the point. “As Melville knew,” Zallen writes, “the history of light was a tale of violence and labor, blood and sweat” (p. 8). Manufacturing light on an industrial scale was, he shows, an ugly, dangerous, and often cruel process. Zallen wants his readers to witness that cruelty and that ugliness. This is emphatically not an optimistic story of technological progress, of light-bringing inventors or entrepreneurs. His focus at all times is on the laborers who did the work—actually, it is not even on the laborers but on their labor itself, and on the bodies ground up in the process.

Like Melville’s famous chapter on the whiteness of the whale, *American Lucifers* is drawn to all the ways that light could bring darkness. The whale oil streetlights that first burned all night in eighteenth-century London did not decrease crime but actually increased it; at least, the number of men and women sent to the gallows for petty thefts and pickpocketing increased greatly. The so-called “safety lamps” used in nineteenth-century coal mines did not make miners any safer; they only let mine owners put workers in greater danger by driving them deeper into methane-choked crevasses and caves. Even when nobody died in its production, the light described in this book brought little enlightenment. It just forced people to work longer hours. Lamps and candles, Zallen concludes, were really “ruling-class instruments of power and death” (p. 28).

Zallen's introduction and conclusion both say the goal of his book was to challenge "the myth of electric light," a set of cultural associations that too easily equate electricity and light with progress and painless convenience (p. 3). In this, he succeeds. It is safe to say that Walt Disney's *Carousel of Progress* has been sufficiently debunked. But it seems to me that Zallen is hunting for bigger game. After all, electric light only appears in the epilogue of *American Lucifer*s. The book's real quarry is not simply our association of light with progress; it is, I think, the great white whale of capitalism itself.

"In history departments, it's up with capitalism," chirped a *New York Times* headline in 2013.² The attached article captured the excitement around an allegedly new wave of scholarship that branded itself "the history of capitalism." [p. 524:] The article also managed to mischaracterize much of this work, exaggerating its claims to novelty and annoying just about every historian not mentioned in the piece, especially the social, cultural, economic, and labor historians who believed they had been writing about capitalism all along. The first books to be marketed as the new history of capitalism grew out of smart dissertations by younger scholars on a grab-bag of topics, like Bethany Moreton's *To Serve God and Wal-Mart* (2009), Louis Hyman's *Debtor Nation* (2011), and Julia Ott's *When Wall Street Met Main Street* (2011). They were hardly the uncritical celebrations of capital that the *Times* had managed to imply, but they could be misjudged that way by their covers, and this did not hurt the marketing of the field.

A second wave of big second books, including Walter Johnson's *River of Dark Dreams* (2013), Edward Baptist's *The Half Has Never Been Told* (2014), and Sven Beckert's *Empire of Cotton* (2014), brought a tighter focus to the "new" history of capitalism: the not-so-new debate over American capitalism's relationship with slavery. For nearly a century after Emancipation, historians of the United States—the white ones, that is—often insisted on imagining the old slave South as a kinder, gentler alternative to the industrial capitalism of the North. Long after that canard was put to rest, many still drew sharp distinctions between slavery and free enterprise. They described the

antebellum South as “feudal,” “pre-capitalist,” or “agrarian”: a backward stage detached from the “proper” evolution of American capitalism. But the big new books on slavery and capitalism reject this separation, coming around at last to what W.E.B. Du Bois, C.L.R. James, and Eric Williams argued eighty years ago: the history of capitalism has slavery at its heart. As Walter Johnson, among the most eloquent current historians of American slavery, now writes, “There was no such thing as capitalism without slavery: the history of Manchester never happened without the history of Mississippi.”³

Economic historians would object at this point that their field has been titrating the precise concentration of capitalism in slavery for over forty years. And economic historians have criticized the new history of slavery and capitalism for what they see as rhetorical excess, weak use of quantitative evidence, and—most damning of all—a failure to read the last forty years of economic history. There is truth to these complaints. The new history of slavery and capitalism paints in broad strokes of blood and suffering; its practitioners manage to be unmoved by input ratios and regressions. But the words “never happened” in the Walter Johnson quotation above are Johnson’s way of waving off the counterfactuals embedded in the economists’ critique: Maybe Manchester could have happened without Mississippi, maybe it couldn’t. What we know for sure is that it didn’t.

Johnson, not incidentally, was Jeremy Zallen’s advisor on the dissertation that became *American Lucifer*. Zallen does not go out of his way to attach himself to the new history of capitalism, but he shares its academic lineage [p. 525:] and *American Lucifer* synthesizes elements from each of its first two waves. In *River of Dark Dreams*, Johnson looked directly at the cotton plantations of the antebellum South and described them as capitalism distilled to its very essence. *American Lucifer* makes a related case in a more oblique way. Mapping an industry we may not immediately associate with slave labor, Zallen looks everywhere but the Cotton Kingdom, yet finds links to slavery everywhere he looks. Northern factories were illuminated with coal gas mined by enslaved Virginians, while Nantucket abolitionists sold whale oil to light slave plantations in the South. Across the United States and all over the world, Zallen sees waged labor and enslaved labor

“lashed together,” like Ishmael and Queequeg, by “dark chains” of capital and commodity flows (p. 99). Everything is connected; everyone was complicit.

One chapter in *American Lucifers* tells the grim story of camphene, a distillation of grain alcohol and turpentine that followed whale oil as the dominant lamp fuel in the United States. Turpentine is made from tree resin; in the 1840s and 1850s, this resin was hacked from pine trees by enslaved woodsmen in the forests of North Carolina. The turpentine camps marked a new frontier in the expansion and industrialization of slavery; by Zallen’s account, they broke new ground in cruelty too. But camphene’s horrors didn’t end in the piney woods. The fluid was notoriously volatile, and Zallen traces “an extraordinarily flammable geography” (p. 69) of slave labor camps, camphene distilleries, warehouses, trains, and tenement buildings routinely exploding into flames. Handling camphene was, he says, “one of the deadliest activities of the antebellum period” (p. 61). Nobody learned this harder than the seamstresses of the New York garment industry. Cheap camphene lamps let them work long into the night, sewing men’s shirts for starvation wages. A hideous number were burned alive by spills of liquid fire. Zallen’s larger point is, again, that camps and lamps were connected, that enslaved woodsmen and immigrant seamstresses were tied together in circuits of work and energy, light and death.

“Everything is connected” is, it must be said, the sort of insight whose profundity depends in large part upon the writer’s skill. While his subject matter is dark, Zallen writes luminously. When making lists or describing journeys, flows, and processes, he tumbles nouns together breathlessly, illuminating a whole world of things being made into other things. Here is a characteristic sentence: “Each American lucifer match was the culmination of world-spanning pilgrimages of bones, shit, wood, sulfur, and glowing and poisoned child laborers, journeys of work and energy and struggle that crossed, unsettled, and reinscribed boundaries between life and death, enslaved and free, capitalist and laborer, adult and child, and even human and animal” (p. 171). The cadence is positively Melvillean.

[p. 526:] Besides *Moby-Dick*, *American Lucifers* reminded me of *Nature's Metropolis* (1991), William Cronon's now-classic environmental history of Chicago and the American West. In *Nature's Metropolis*, Cronon mapped the routes and processes by which grain, lumber, and cattle fed Chicago's growth: how grasslands became wheat fields, how cows became sides of beef, how nature was turned into money. Zallen's vivid descriptions of the networks through which whales, trees, bones, and rocks were hacked, boiled, or burned into light are compelling in much the same way. The biggest difference I could see is that Cronon occasionally betrayed a grudging admiration for the cleverness of the merchants and meatpackers who engineered Chicago's growth. Zallen barely mentions a single system-builder or entrepreneur, maintaining a laser focus on physical labor and the violence it did to fingers, backs, bones, and flesh.

Slavery was central to the industrialization of light, but it was never the only stripe of exploitation. Blurring the boundaries between waged and enslaved labor is a characteristic move of the new history of capitalism, and Zallen follows suit. There are many gradations of unfreedom; Zallen maps an ecology of exploitation in which capitalists coerced labor from wage earners, husbands from wives, parents from children, and farmers from livestock. More than once, he puts scare quotes around the words "freedom" or "free;" after reading about the "stinking, luminous" children who toiled in Manchester match-dipping factories, you are unlikely to disagree with him (p. 169). The boys and girls in these factories, some as young as six years old, became so coated with phosphorus that they glowed in the dark, even after bathing; after years of this poisonous work, some suffered such excruciating pain in their teeth that their jaws had to be cut from their skulls. Making artificial light yoked together the labor of poor children, migrant workers, sweatshop seamstresses, prisoners, and animals, all something less than free.

Like Cronon and other environmental historians, Zallen also troubles the boundary between humans and animals. In his telling, even whales are exploited workers, harvesting energy from the oceans and storing it up as fat. His chapter on lard lights, candles made from pig fat in the bloody pork-packing plants of Cincinnati, seems like a bravura bid to outdo Cronon's chapter on the beef-

packing plants of Chicago. Zallen wants his readers to hear the squeals of each dying pig, to wince at every chop. His next chapter features yet another set of slaughterhouses, the South American *saladeros*, where cattle bones were ground up to make phosphorus. Here, Zallen differs a little from his mentor Johnson, who uses the concept of “racial capitalism” to highlight the mutually constitutive nature of racial and capitalist exploitation. While alert to race, Zallen does not make it the center of his story. If anything, what moves him most is the human slaughter of other species. For Johnson, the essence of capitalism was the antebellum slave market. For Zallen, it is the abattoir.

[p. 527:] After writing *The Jungle* (1906), another unlovely book about slaughterhouses, Upton Sinclair lamented, “I aimed at the public’s heart, and by accident I hit it in the stomach.” Readers fixed on Sinclair’s stomach-turning descriptions of Chicago meat-packing plants while overlooking his case for solidarity and socialism. Is there no danger that Zallen’s arguments will be upstaged by all the charred flesh and broken bones in his book? I’m not sure. I suspect that the charred flesh and broken bones are Zallen’s argument. He paints a brutal portrait of American and global capitalism, one entirely at odds with that puff piece in the *New York Times*. Reading *American Lucifers*, at first I marveled that the business of making light was so uniquely horrible to its workers. Then a light dawned on me: was *every* industry this terrible? Thar she blows.

American Lucifers is a history of labor in the most literal sense—a history of work itself—but it will not be mistaken for labor history as most historians remember it. There is no organized labor movement in the book. There is little solidarity, and even less class consciousness. Karl Marx does have a brief cameo, but only to lament the lot of Manchester’s little match-makers as they trudge to their poisonous work. Zallen talks about “struggle,” and, like the labor historians of the 1960s, 1970s, and 1980s—people like E.P. Thompson, Herbert Gutman, and Alice Kessler-Harris—he seeks out examples of resistance. But these moments of resistance are, with one significant exception, sporadic and short-lived: workers on a guano island stage a mutiny until their employers starve them back into submission; working children start fires that may or may not be accidental;

whales smash whale boats and escape. It is dispiriting to read a history of labor in which whales put up a better fight against the bosses than humans, and phosphorus offers more resistance than whales.

American Lucifers also put me in mind of Bruno Latour, another virtuoso of networks and circuits whose work tends to dissolve all distinctions—nature/society, class/race/gender, humans/things—into an intricate but essentially apolitical web of connections and flows. In a sharp critique of Latour’s de-politicized materialism, Rebecca Lossin recently wrote, “this understanding of capitalism is of no use to anyone except capitalists.”⁴ I would not say that about Zallen’s work, but I did wish *American Lucifers* had more to say about politics and political causation. An ecological approach reveals a great deal, but it can also naturalize exploitation, making it seem timeless and inevitable: whales eat krill, human beings work other human beings to their deaths, and it was ever thus.

This may be characteristic of the new history of capitalism. In a series of thoughtful blog posts on the field, Andrew Seal pointed out how often these works are structured by metaphors of networks and circuits, rather than chronological narratives of events. “Circuits,” Seal writes, “are acts of coordination and articulation rather than rituals of solidarity.”⁵ Zallen is certainly more invested in mapping networks across space than in chronicling structural [p. 528:] change over time. Each of his chapters begins *in media res*, with exploitation well under way and solidarity nowhere to be seen. While discussing the jaw disease that afflicted phosphorus-poisoned children, Zallen reminds us that “disease” was just a euphemism: “what people called violence that they couldn’t understand, where the effect was obvious but the cause was mysterious” (p. 197). For all Zallen’s insights, *American Lucifers* turns capitalism into just such a disease, a global web of violence whose effects are all too clear, but whose causes are allowed to go unnamed. If only there were a branch of history devoted to its study!

You might think a history of capitalism would have a lot to say about where capitalism came from, or about transitions between its different eras. Traditional labor history, especially Marxist

labor history, lavished attention on stages and phases of capitalist development. But the current history of capitalism has moved away from periodization and other turning points, just as it downplays distinctions between different modes of production and their associated social relations. That old labor history, after all, was written in a world where capitalism still had rivals. The new history of capitalism, by contrast, is a product of our neoliberal “end of history” moment. Even at its most critical and perceptive—even, that is, in the pages of *American Lucifers*—the new history of capitalism struggles to imagine anything beyond or outside the current arrangement. Its goal may have been to historicize capitalism, but it finds it everywhere, and so elevates it to the realm of the eternal.

The last chapter of *American Lucifers* imagines a grim counterfactual: what if American slavery had never ended? If emancipation had been delayed by even a few years, Zallen argues, a coal-fired industrial revolution in the South might have produced a dynamic new slave power: an expansive, fully industrialized slavery no longer tied to cotton cultivation or the geographic limits of the Confederacy. Zallen urges us to confront the fact that slavery could have survived, that nothing in the logic of capitalism or American history required its demise. After the chapters that precede it, *American Lucifers*’ alternate ending seems all too plausible. But to me this begs the question: why did it not come true? In Zallen’s telling, the end of slavery was almost a fluke, a lucky accident of timing around the Pennsylvania oil boom of 1859.

Well, that and the Civil War.

This is, of course, the one exception to the absence of meaningful resistance in the book. Following Du Bois, Zallen credits “the world’s greatest slave rebellion”—the enslaved men and women who, at the coming of war, stopped their work and deserted their enslavers by the hundreds of thousands—with defeating the Confederacy and forcing the Union to end slavery (p. 242). This upheaval also remade the industries of artificial light, crippling the American whale fishery, abolishing camphene, and consolidating a shift to fossil fuels over organic sources of energy.

[p. 529:] Emancipation is the closest thing to a happy ending this book was ever going to have, but in strictly narrative terms, it is a *deus ex machina*, an interruption unconnected to the chapters that have gone before. The historian of antislavery politics James Oakes has quipped that the Civil War, no trifling matter, is the one thing the new history of capitalism does not purport to explain.⁶ If you dissolve the differences between North and South in a seamless web of complicity, disregarding the structural bases of the conflict and erasing decades of political struggle over slavery, the war becomes incomprehensible; emancipation becomes a fluke. To be fair, Zallen's history of artificial light is not obliged to be a history of abolition. And the Civil War has not exactly been neglected by historians. Still, the last chapter of *American Lucifers* points towards the explanatory limits of webs and circuits, or why a history of labor ought to have some politics in it. Sometimes the world does change. Sometimes, human beings even change it.

One review of *American Lucifers* posted on Amazon (speaking of global webs of exploitation) huffed, "I guess we should all live in a cave—cold, dirty, hungry and in the dark."⁷ I don't believe that is what Zallen is arguing, but I understand the reaction. *American Lucifers* conjures up horror after horror, yet its disinterest in politics—in that crucial question, "what is to be done?"—gives readers little to do with the emotions it provokes. Is answering that question Zallen's job? No. Still, I wish this book traced networks of solidarity as deftly as it does circuits of complicity. I wish this breathtaking history of bodies at work and in pain made just a little room for the history of minds. And I hold out hope for a new history of capital and labor, one as expansive and intersectional as Zallen's, but illuminated by the old labor history's belief in alternatives to capitalism and the possibility of meaningful change. But my dissatisfaction with the ending of *American Lucifers* is only a testament to how impressive and affecting I found the book. I know I will be rereading it and pressing it on students and colleagues for some time to come.

Zallen ends this compelling, often troubling, book by paraphrasing Melville: "The next time you flip a switch to turn on a light, for God's sake, be economical with your electricity" (p. 271). I am all for conservation, but this seems inadequate after all the pain and suffering *American Lucifers*

has described. I have a different idea, in solidarity with the exploited, tortured, murdered workers in its pages: Light a match. Burn it all down.

Robert MacDougall is an associate professor of history at the University of Western Ontario and author of *The People's Network: The Political Economy of the Telephone in the Gilded Age* (2014). He is currently writing a cultural history of nineteenth-century thermodynamics and the dream of perpetual motion.

- [p. 530:]
1. Herman Melville, *Moby-Dick; or, The Whale*, 1851 (New York: Signet Classic, 1961), 206.
 2. Jennifer Schuessler, "In History Departments, It's Up With Capitalism," *New York Times*, April 6, 2013.
 3. Walter Johnson, "To Remake the World: Slavery, Racial Capitalism, and Justice," *Boston Review*, October 2016.
 4. R.H. Lossin, "Neoliberalism for Polite Company: Bruno Latour's Pseudo-Materialist Coup," *Salvage* 7 (Autumn/Winter 2019).
 5. Andy Seal, "Some Thoughts on What Separates Working Class History from the New History of Capitalism," *U.S. Intellectual History Blog*, September 16, 2019.
 6. James Oakes, "The New Cult of Consensus," *NonSite.org* 20 (Winter 2017).
 7. Louise Radanovich, Review of *American Lucifers*, *Amazon*, February 25, 2020.