

Whales, War, and Strange Taxes: A Brief History of Kerosene, by Ken Major



Figure 1. Kerosene lantern burners, wick raisers, and chimney holders found in Pawlet, Wells, and Rupert. (photo by author)

I find pieces of kerosene lanterns routinely when metal detecting home sites in our region that were inhabited in the late 1800s. Like most things I discover as a metal detectorist, these objects pushed me to learn more about them as I seek to understand the people who left them behind and the world they inhabited.

These lanterns had been the principal source of light in rural America for over 70 years by the time Pawlet received electricity in the 1930s-40s. With

the advent of electric light, gone were the daily chores of washing lamp chimneys and trimming wicks,ⁱ and the once omnipresent threat of fire

associated with both candle and lantern use in the rural home was finally confined to the fireplace and stove. After finding lantern pieces so frequently and learning just a little about them, I was tempted to think of the kerosene lantern as a great invention in its own right. As it turns out, that view misses a great deal. The story of how kerosene ended up being the principal fuel for illumination across most of rural America for generations is far more complex and farther reaching than I could have guessed when I sat down to try to satisfy my curiosity. What follows is a very brief tour the intersections between whaling, the Civil War, and a simple tax that might have ushered-in a world that was at first just lit, and then later run, by petroleum products.

The first thing I discovered was an interesting and oft-repeatedⁱⁱ history of the rise of kerosene that goes something like this: it was a near-miraculous fuel source that, once discovered, rapidly overtook the market place (then dominated by whale oil) thereby saving our large ocean-going friends. As the son of a whale-loving marine biologist, this story appeals to me deeply as an example of how shifts in technology can actually help to preserve the natural world instead of threaten it. Unfortunately, that story doesn't turn out to be all that accurate.ⁱⁱⁱ

When Abraham Gesner first distilled kerosene from coal in 1846, the best illuminant available did still come from the oil harvested from the cavernous heads of Sperm whales. The trouble was, it was incredibly expensive (around \$200 a gallon in today's money). Most of the rural world at that time was still navigating about home by the dismal, fetid light given off by tallow candles, and some by lamps lit by lesser oils. Yet spermaceti oil or candles made from that oil both burned bright and clearly, didn't spoil, and gave off no unpleasant odor, unlike normal whale oil and tallow candles alike. So, people who could afford them bought them, and between home illumination and limited early

industrial uses, the market for spermaceti oil and all other types of whale oil was significant: during the 1840s, 8-10 million gallons of spermaceti oil, and 3-4 million gallons of oil from other whales, were harvested annually.^{iv}

Coinciding with the advent of kerosene however, the sail-ship whaling industry was, unbeknownst to its investors, over-extended and already a year along the down slope of its production curve^v in spite of being the 5th largest industry in the US at the time. Its growth during the first half of the 19th century was based on a whale population that was still robust enough to be easily accessible. The overall success of the years leading up to the peak had resulted in a massive build up in the American whaling fleet, expanding from 203 ships in 1829 to 736 in 1846^{vi}. But as Starbuck described in his federal report of



Figure 2. Whale oil lamp, cir. 1700s (public domain)

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whaling in 1876, “then came losses, and as whales became more scarce and voyages were more prolonged and far more expensive, these reverses became more and more serious, until individual owners dropped out of the corporations, corporations became extinct in the ports, and finally the ports themselves became disconnected with the business” (p.100). By the mid 1850s, even regular whale oil had become prohibitively expensive.

Yet kerosene wasn't the only player on the market as whale oil production declined and its cost increased. Camphene (a very aromatic solvent that was unfortunately prone to explode) and “burning fluid” (a mixture of camphene and alcohol) were both very popular by the second half of the 1850s. Burning fluid was especially so, and was produced in massive amounts far exceeding both whale oil and

coal-based kerosene. Most of this demand was in rural areas, as in many cities gaslight, the toxic and highly flammable vapors created by heating coal in a confined space, steadily grew in popularity; this technology transformed many urban centers that came to enjoy networks of piped-in illumination inside and outside of the home. But then things became very interesting: oil fields in Pennsylvania discovered in 1859 coincided with the technology to refine kerosene from oil instead of distilling it from coal, and suddenly oil was poised to change the world. Even the whales knew it, according



Figure 3. Cartoon from *Vanity Fair Magazine*, 1861. Text reads: “Grand Ball given by the whales in honor of the discovery of the oil wells Pennsylvania.” (public domain)

to this cartoon appearing in an 1861 issue of

Vanity Fair.

While it likely would have found its footing in the market eventually, oil-derived kerosene (and by extension, the whole petroleum industry) got the push it *really* needed because of the Civil War. In an effort to raise funds for the Union, the Internal Revenue Act of 1862 created a massive tax on alcohol (over \$2 a gallon at the time) that priced the alcohol-based illuminant competition to kerosene out of the market place. At around 30-60 cents a gallon retail, kerosene was suddenly in the light race all alone, its former rivals made many times more expensive by an oversight: the tax was apparently meant only for beverage alcohol, but the language of the Act wasn't specific enough to exclude industrial alcohol. Whole alcohol-related industries collapsed in the years that followed, and kerosene ascended in the US, while in Europe camphene and burning fluid held significant shares of the illumination market for decades in the absence of similar petroleum-friendly tax policies.

Still one wrinkle in history remains to fully appreciate kerosene's total market dominance by the 1870s, and it again involves whales. A number of books^{vii} and contemporary reports^{viii} document that Confederate raiders devastated the New England whaling fleet during the Civil War, essentially ending any hope of that industry competing in earnest again. Sadly, while whale populations stabilized or even grew from the Civil War to the mid 20th century^{ix} large scale whaling operations beginning after WWII did more harm to these beings in two decades than had been done in the prior 250 years...it turned out that whale oil provided a machine lubricant with unparalleled capabilities in extreme temperature ranges, useful even in an era of synthetics. In 1975, General Motors blamed^x widespread failures of its

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recent transmissions on the then-new US law that prevented them from using spermaceti oil in their transmission fluid.

Of course, we all know the basics of how the rest of the story went, and why kerosene lanterns became an obsolete technology: electricity came to illuminate our houses, coal and then oil came to heat them, and then gasoline came to power the vehicles that changed the world. Thanks to global conservation efforts in the 1970s, whale populations are once again recovering. And much like the 1860s we now seem to face another range of choices related to technologies that rely on (or threaten) different resources in the context of larger social activity and comforts. After learning all of this I'm left wondering if our society could replicate that incredible tax in 1862 which paid for the Civil War by ruining alcohol-based fuel margins and ensuring the petroleum industry's future. What would happen to, say, the solar industry if we raised money for war by taxing gasoline to \$10 a gallon? Perhaps more than just whales would benefit in the long term...

ⁱ "Turning on the Lights: Electricity Comes to Rural Vermont," *The Green Mountain Chronicles-Vermont Historical Society*, 1988-89, <http://vermonthistory.org/research/research-resources-online/green-mountain-chronicles/turning-on-the-lights-electricity-comes-to-rural-vermont-1943>

ⁱⁱ "How the Oil Industry Saved the Whales," *San Joaquin Valley Geology*, last modified October 12th, 2015, <http://www.sjvgeology.org/history/whales.html>

ⁱⁱⁱ Bill Korvarik, "The Whale Oil Myth," *Brilliant: Exploring the History of Sustainable Energy*, Fall 2008, <http://www.environmentalhistory.org/brilliant/bioenergy/the-whale-oil-myth/>

^{iv} Walter Tower, *A History of the American Whale Fishery*, Series in political economy and public law, (Philadelphia: 1907), pp. 94-95, [ISBN 1-116-72422-7](#), [OCLC 145429333](#)

^v Starbuck, Alexander. *History of the American Whale Fishery from its Earliest Inception to the Year 1876*. 1876. Reprinted Secaucus, NJ: Castle Books, 1989.

^{vi} John Bockstoce, *Whales, Ice, & Men: The History of Whaling in the Western Arctic* (University of Washington Press, 1986) [ISBN 0-295-97447-8](#).

^{vii} Raphell Semmes, *Memoirs of Service Afloat, During the War Between the States* (Baltimore, Kelly, Piet & co.; London, R. Bentley, 1868).

^{viii} "The Pirate Shenandoah-Destruction of Whalers," *The Hawaiian Gazette*, October 10, 1865. <http://www.nytimes.com/1865/10/10/news/the-pirate-snenandoah.html>

^{ix} Taylor, B.L., Baird, R., Barlow, J., Dawson, S.M., Ford, J., Mead, J.G., Notarbartolo di Sciara, G., Wade, P. & Pitman, R.L. 2008. *Physeter macrocephalus*. The IUCN Red List of Threatened Species 2008: e.T41755A10554884. <http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T41755A10554884.en>.

^x "Is Whale Ban Rotting Cars?" *The New Scientist*, May 1, 1975. <https://books.google.com/books?id=4-KOJiefZEoC&pg=PA262#v=onepage&q&f=false>