

[Bonus] AFD Ep 343 Links and Notes - Let's Talk About Cans, Baby (The Invention of Double Seam Canning). **[Bill/Rachel]**

- A cursory history of canning and canned goods until the 2nd Industrial Revolution:
 - Canning had begun to ramp up toward the end of the first industrial revolution because the huge military demand for canned goods in the 1850s and 1860s in Europe and the United States allowed canning factories to expand production on the government dime which could then be repurposed for civilian production after
- What is required for double-seam canning (1888)?
 - https://en.wikipedia.org/wiki/Double_seam
 - https://en.wikipedia.org/wiki/Canning#Double_seams
 - Rubber
 - Sheet-metal die-cutting ([https://en.wikipedia.org/wiki/Shearing_\(manufacturing\)](https://en.wikipedia.org/wiki/Shearing_(manufacturing)) & [https://en.wikipedia.org/wiki/Die_\(manufacturing\)](https://en.wikipedia.org/wiki/Die_(manufacturing))) which grew out of the tool and die innovations of Eli Whitney for the US military in the War of 1812
 - <https://www.britannica.com/technology/tool-and-die-making>
 - <https://www.hSDL.org/?view&did=707777>
 - A “can seamer” machine https://en.wikipedia.org/wiki/Can_seamer
 - It was also vaguely helpful from Pasteur’s work in the 1860s to understand the safety better, but not strictly necessary, as a) safer canning had already accomplished that without understanding why, and b) industrial canning factories didn’t actually care that much about food safety either way ... so this wasn’t a big priority, which is one reason poisonous preservatives were often still in food until after the turn of the century and the food safety campaigns began.
 - Was this a technology that improved safety or a technology developed in search of safety? (See Underwood section below)
- What are the social & material consequences of double-seam canning?
 - Less likely to get diseases in the canned foods
 - No more lead soldering on the seals
 - Faster & cheaper to produce
- Amanda Jones: In 1872, she patented one vacuum method of canning and in 1890 she opened a canning factory that would only employ women, ostensibly to advance the cause of feminist self-determination and empowerment, possibly making her one of liberalism’s earliest Girlbosses until the business failed in 1893
 - [https://en.wikipedia.org/wiki/Amanda_Jones_\(inventor\)](https://en.wikipedia.org/wiki/Amanda_Jones_(inventor))
- Can openers weren’t invented until 1855 so people spent almost 50 years bashing cans open with whatever sharp object or blunt object they could find.
- Thermal Death Time and the research of William Lyman Underwood at his family’s longstanding canned foods company, which had supplied goods to Western pioneers and Union soldiers (probably Rachel knows some more on this food safety aspect): In 1896, he began publishing papers on the heat level and length of time required to kill trickier bacterial food contaminants so that canning could be made even safer than double-seam vacuum sealed cans were, because they were losing enormous volumes of products to contamination “swelling” on the shelves:
 - https://en.wikipedia.org/wiki/William_Lyman_Underwood
 - https://en.wikipedia.org/wiki/Thermal_death_time
 - https://en.wikipedia.org/wiki/William_Underwood_Company
- <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2621.1969.tb14368.x> (Abstract) (Clams harvested in mud with high calcium content may harbor more thermoresistant bacteria) The spore-forming bacteria isolated from muds were classified and consisted of 83% *Clostridium* and 17% *Bacillus* genera.

- <https://www.smithsonianmag.com/history/botulism-outbreak-gave-rise-americas-food-safety-system-180969868/> Botulism outbreak from canned olives led to industry cooperating with public health officials to create regulatory standards for processing and greater oversight by California State Board of Health