Erin Welsh	Hi, I'm Erin Welsh and this is This Podcast Will Kill You. Welcome everyone to the latest installment of the TPWKY Book Club where our to-read lists grow ever longer and our appreciation for amazing science communicators writing these enlightening and entertaining books grows ever deeper. On a personal note, this miniseries has been an absolute blast to put together with some truly unforgettable conversations about incredibly wide-ranging topics and I just really love that I get to do this. So thank you so much to all you wonderful people for listening and to all these amazing authors for chatting, without you this would not be possible. We find ourselves now in the second to last episode in this miniseries and while I won't list off each book that we've talked about like I've done in every other intro because that's a whole lot of books at this point, I will just say again how much I've loved hearing from you all about these episodes and will happily welcome any other feedback, favorites, follow up questions, future book recommendations, or anything else you want to tell me.
	Okay, but that's enough podcast business for the time being. Now let's get into what we'll be talking about today and that is the food of the past. If I asked you to imagine what food tasted or looked like back at the turn of the 20th century, I think many of us might imagine an idealized world where tomatoes were plump, juicy, and always ripe; where meat was pure, untainted by hormones or antibiotics; where butter was always fresh, churned from milk straight from the cow. That is unless you've read Upton Sinclair's 'The Jungle', in which case you might have a grittier, more realistic picture of what things were actually like. But I think many of us buy into this romantic notion that everything was fresher, more flavorful, healthier, less processed, more pure back in the day. And frankly that could not be further from the truth.
	Acclaimed science journalist, professor, and Pulitzer Prize winning writer Deborah Blum joins me today to chat about her excellent book 'The Poison Squad', also made into a PBS series in 2020, which explores the wild unregulated mess that was the US food industry in the early 20th century and the contentious fight to clean up that mess led by some truly remarkable individuals. Blum, whose best selling book 'The Poisoner's Handbook' is certainly a favorite of many of our listeners, paints a vivid picture of the pre-regulation food industry and the tremendous fight for safe foods. The growing urban populations of the 19th century required a food supply to keep up with the ever increasing demand and one way that producers found to do this was through food adulteration, a deceptive practice that involves adding substances to food to change its appearance, its taste, its volume or size. Blum's book is filled with horrifying examples of early food adulteration as well as not a small number of scandals where people lost their lives due to poisoned food.
	It seems like this practice of food adulteration would not be tolerated by consumers or any regulatory body, making it pretty bad for business. But the fact of the matter was that there were no regulatory bodies to impose fines upon these deceitful producers and the lack of labels on foods meant that consumers couldn't make an informed decision about whether they wanted to buy butter that contained borax or did not contain borax. So business went on as usual until chemist Harvey Wiley stepped in and started his lifelong crusade to make food safe for public consumption. The efforts of Wiley and his poison squad captured the public's attention in a major way and greatly advanced the fight for food safety legislation. But even though it seems like safe foods and consumer protection should be a thing that everybody wants, it was not a one sided battle. Wiley was fighting against a corrupt industry that had long made sure to keep the federal government on its side.
	In today's episode, Blum and I discuss Wiley's monumental impact on food safety legislation in the United States, some of the shocking food poisoning scandals that incited the public to activism, how far we've come in terms of consumer protection since the Pure Food and Drug Act of 1906, and how much further we still have to go. I am super excited to get started. So let's take a quick break and then dive in.
TPWKY	(transition theme)

Erin Welsh

Deborah, thank you so very much for being here today. I am such a big fan of your work and I especially loved 'The Poison Squad' for how you brought to life the incredible story of Harvey Wiley and his quest for food safety in the US.

Deborah Blum

Thank you so much. It's really a privilege. I'm excited to be on this podcast and I love talking about Harvey Wiley and sort of the invention of food safety in the United States, that is part of his story. So I really appreciate you having me on.

Erin Welsh

Well I loved hearing about that story and the other thing that I loved about your book were all of the delightfully disgusting and horrifying examples of food adulteration that you described.

Deborah Blum

They were horrifying and disgusting.

Erin Welsh

It was truly shocking. I think there were many times where I pulled my partner aside and was like you've got to read this, look at this! How did you first come across the story of Harvey Wiley and what most interested you about this period of history?

Deborah Blum

Yeah, that's a great question. So I have been what I think of as a toxicology journalist for over the past decade, I've written about poisons and homicide. My real interest is poison in our everyday life, right. How we navigate a chemical world that includes things that are really dangerous for us. And a lot of my interest has been in the history of science as well, how did we get here? And so when I was looking at poisons in the early 20th centuries, which is a special interest of mine, I started seeing references to what is truly one of the strangest public health experiments in American history which was conducted by Harvey Wiley and was nicknamed the poison squad, which I can explain later, by the Washington Post. And I almost in this very simple-minded way, I thought well what in the world is that?

And so then when I started looking at the experiment, and one of the things that makes this such an unusual experiment is you really have a chemist at the US Department of Agriculture deliberately poisoning his coworkers, that's one of the elements of the poison squad that's so fascinating actually, in the interest of trying to figure out what's going into our food. And when I was reading the descriptions of that I thought why would you be so desperate as to do that? What would it take to have an established government chemist say the only way that I can get the answer to this problem is to do this incredibly risky experiment on young men working in my agency? And that sort of pushed me off the cliff into the whole question of what was going on in food at the time that made things so crazy that you would need to do that experiment? It was something I think I'd never really thought about before but that really was the sort of tipping point of that inquiry.

Erin Welsh

Yeah. And I think a lot of us tend to think of food from that period of time as being fresher, meat was fresh, milk was straight from the cow's udder, and foods in general were more quote unquote "pure". But what was food actually like during the late 19th and into the 20th centuries, particularly in cities in the US?

Deborah Blum

Yes. That was like almost a moment of horrifying discovery for me because I also had thought in the way we'll sometimes talk about the wonderful farm fresh food of our ancestors, right, this pink-cheeked, healthy, happy period of the 19th century, that was my... I had bought into that mythology as well completely. So that when I started unpeeling the layers of what food was like in the late 19th and early 20th century, it was like wait a minute. And so part of it is that there is a mythology to it and some of that is the way we tend to sort of romanticize the agriculture of the past and the idea that we were a happy rural nation with everyone just walking over to Farmer John's orchard to get their apples. But that wasn't true, right, especially starting in the mid 19th century and post the Civil War, we were increasingly an industrial nation.

So there were people who lived on farms and ate farm fresh food I assume, right. And there were wealthy people who owned their own farms or were able to purchase those things. But the majority of Americans increasingly were living in cities, they were working in factories, scraping by, they weren't going out into the country to get these expensive farm fresh materials, they were buying them at corner stores and local grocery stores and they were buying a lot of... With the rise of industry came the rise of industrialized food. So they were buying a lot of manufactured food. And one of the things about the rise of sort of food manufacturing, canning, and other ways that we sort of bring things from the farm to the grocery store or the grocery store to your table is that this was also a period in which there was no food regulation which is sort of the other part of the story.

So I am a food manufacturer, there are no laws telling me what I can put in food, there are no laws requiring that you label the food, you don't have to tell people what's in it. There's nothing. And so if in a capitalistic society the idea is to maximize your profit, it was like free rein to do so. And we saw incredible consequences of that to the point that I started thinking to myself did people in the 19th century ever eat what they thought they were eating? Because there was so much fraud, it was crazy.

Erin Welsh

It's unbelievable. And I loved reading the list, the many lists, the many instances, just my jaw dropping over and over again with some of these examples. Were there any in particular that you found the most shocking of like a food additive or a food lie? Or any that you found the most appalling in terms of the producers' complete disregard for human health?

Deborah Blum

Yes, that's a really important point I think. So you have widespread fraud and you have widespread fraud and basically if you think about it things that are easy to fake. So you know, spices, right? You had brick dust that went into cinnamon and paprika and the red colored spices. Flour for bread, the people would grind up gypsum which we put in wall board as a flour extender, right. I mean again, going back to what were you actually eating? I was myself horrified by coffee, I love coffee, it's the way I start every day. You almost never got actual coffee in your coffee or a full cup of coffee. Sometimes you got ground bone, right, sometimes you just got dirt. There was a doctor in the upper Midwest who at one point speculated that the phrase 'a muddy cup of coffee' came from the idea that most Americans were drinking a fair amount of mud when they thought they were drinking coffee. And it was so...

To give you an idea, because coffee makes a good example of how entrenched the fraud was, the original fraud was the ground coffee. How can you tell what's actually in these particles in the can of coffee, right? It could be coffee, it could be ground seeds, it could be ground coconut shells which were also used. And so people began to become increasingly suspicious of ground coffee and switched over to coffee beans. And of course this was the 19th century so you go down to the corner store, there's a barrel full of coffee beans, you have the grocer scoop them up for you. And so what you find is this new industry in fake coffee beans, right. Then you can actually find the formulas for making the coffee bean means, there's the little molds for them, they're made of wax and clay. And then when you grind them up at home, of course they go into your coffee.

And this is repeated over and over again. You see it in whiskey, you see it in wine, you see it sort of across the board in all kinds of food products. You see, going onto your other question about what I found shockingly unhealthy, the use of toxic compounds to color food. So arsenic is used to make green food coloring, lead is used to make red food coloring. You would find lead in cheese because they wanted that orange look of cheddar so they would mix in a little red lead. It's completely acceptable. But to me, the sort of stand out horror story involves milk and the additives that go into milk.

Erin Welsh

Yes, absolutely. It's almost as though the fraud drove the most incredible creativity in terms of like how can we make quote unquote food that has actual no edible components to it? It's amazing.

Deborah Blum

It's insane. And so with milk of course, the number one thing it starts with people just watering the milk, right. I can make a lot more money if I use water, I don't particularly care if it's clean water. I think I put in the book this one instance where they found horsehair worms and milk because the dairyman had just, speaking of disgusting, just used pond water to water down his milk. The milk when it was too watered would turn kind of bluish, s they'd add in plaster of Paris or chalk. They would occasionally fake cream by pureeing calf brains and floating them on top of the milk in this lovely creamy looking way. It's kind of disgusting. But the other thing about milk is you have to remember this is a time when there's no refrigeration, so milk spoiled.

And when we look at how dangerous milk was in the 19th century, which it was, some of it has to do with that, right. You have a huge, milk is a wonderful substrate for bacteria. It's got sugar, it's got protein, everything a good pathogenic bacteria wants. And so you had all these horrible pathogens of milk, bovine tuberculosis, brucellosis, right. And as the milk began to rot, they grow and grow and grow. So dairy men then are trying to figure out a cheap way to deal with this and they turn to an embalming agent, formaldehyde, and they start embalming the milk, right. Literally embalming the milk.

When you go into newspapers of that time, there are headlines 'embalm milk scandals' in which dairy men are putting formaldehyde in the milk, not under the name formaldehyde, and remember they don't have to label it anyway. And then children are dying and getting sick. And so that is such an insane thing to do. Formaldehyde is so poisonous, they knew it was poisonous, right. You could argue with some of these additives like salicylic acid which is a component of aspirin, we know that makes the lining of the stomach bleed. Did they really know that then? Only somewhat. But formaldehyde? Out and out poison. So they did know and they just obviously didn't care. It's really a horrifying story.

Erin Welsh

Yeah, absolutely. So you just went through an incredible list of foods that were adulterated or not even, like spices, milk, coffee, everything that contained harmful chemicals or pathogens and parasites. And the list seems endless. But were there any foods in particular that seemed to be the biggest problems or that were the first targets in terms of food safety legislation?

Deborah Blum

Yeah, that's also an important point. So during this whole period with the rise of industrial chemistry going into food, there's a whole series of failed attempts to regulate food at the national level. There were states that passed laws. Indiana, which was the state that suffered a huge outbreak of embalmed milk deaths, I think they had 400 in Indianapolis one summer, passed a law driven by the dangers of milk. So you see milk and dairy products becoming one of the real targets of food safety laws and this sort of patchwork of responses at the state level at this point. It's milk, it's cheese, it's adulteration of spices. Congress held a number of hearings and one of the things that come up there is, this is fraud rather than risk, but honey and syrups were largely corn syrup at that time.

And again, to show you how ingenious it was, there would be honey, it would actually be corn syrup and they had a business of making fake honeycombs that they would make out a wax and drop into the corn syrup to make it look like real honey. So you have a lot of interest in this. Again, there were states that targeted the fraud in maple syrup, the fraud in honey, the government looked at fraud in jams and jellies, right. Strawberry jam often had no strawberry in it at all and they would use grass seed instead of strawberry seeds. And then the dyes of the time are aniline coal tar dyes pretty much. So you'd get these red coal tar dyes and get corn syrup and grass seed. And they actually had one congressional hearing and a manufacturer who said well we couldn't possibly do it another way because we would lose market share if we went to the expense of putting strawberries in our strawberry jam. So you have this whole system that is catching people's attention.

What really catches people's attention are the really horrible frauds and then the scandals like the embalmed milk scandal. And so some of the things that start coming up in addition are the preservatives used in meat. And that really came up after the Spanish-American War when there was a huge scandal that was actually called the embalmed meat scandal in which the government had to investigate whether it had killed more soldiers in Cuba by its own food supplies than the Spanish had killed in Cuba during the Spanish-American war, right? And yeah, insane time, right. Really when you look back on it in this landscape of do whatever you want with food, it's a pretty unbelievable period of contaminated food.

That doesn't mean that, and this is one of the important things to realize that aside from very, very, very toxic things like formaldehyde that people were literally dying where they stood, it does mean that people were a lot less healthy related to their diet. There's a wonderful historian, medical historian at the University of Michigan, Howard Markel, who tends to describe the 19th century as the century of the great American stomachache. Food was making people sick, right. And that was almost an accepted part of life at that time. Something I think we don't appreciate now, just how unwell we were based on what we ate.

Erin Welsh

In this discussion of food fraud vs food safety, which I think is a really interesting sort of designation and important one, did the conversations around food policies, whether for fraud or safety, did that revolve initially around protecting producers or consumers? Or when was that switch made or was it sort of about both from the very beginning?

Deborah Blum

You know if I go back to Harvey Wiley, who's the focus of my book, and let me just sort of bring him into the conversation. He was the Chief Chemist of the Bureau of Chemistry in the Department of Agriculture starting in 1883. And at this point there are no food safety laws at the federal level and there are no food safety organizations like the FDA, right. There is the Department of Agriculture, it has this tiny chemistry unit that's responsible for all agricultural chemistry issues, soils and fertilizers and developing better plants through chemistry. And also because Wiley was uniquely interested in food safety and integrity, he starts bringing that into the mix, right. And his real focus was on food fraud when he came in. It grew into food safety but when he started, he had done some early investigations in Indiana on fake syrup and fake honey and that whole problem. And when he came into the federal government from being a professor of chemistry at Purdue, he brought that interest in fake food with him.

And so he commissioned a series of reports just looking at the integrity of manufactured food, starting with dairy obviously for the reasons we discussed and going on through all kinds of things, canned vegetables and lard and cocoa and coffee and wines and beers. I mean they're just sort of analyzing a random sample of food and drink products in the United States. He was most interested in fraud when he started but those investigations, which you can find under the incredibly boring titles of Bulletin 13 which is what they were known as, but those investigations started to lead him to be aware that there were more issues than just fraud that mixed into the fraud and sometimes actually part of the fraud was the addition of these things that were dangerous. So for instance I might say to you well I don't see any harm in putting gypsum into flour. I mean there's been no studies of gypsum that shows that it's poisonous. No studies of course had been done on gypsum but you could make a case that that's actually not that healthy, right?

So as he starts looking at the sort of methodology of the fraud, he says well is it really good for us to eat brick dust every day with our spices? Is it really good for us to eat charred bone in our coffee, right? Aren't we talking about health as well? And so during the course of these reports that he started in the 1880s and went to the 1890s, you start to see him introducing the subject of risk more and in a fairly moderate way. He's just saying couldn't we label these? We've got children eating these materials, we have sick people eating these materials. Couldn't we just put labels on these so you would know that there was formaldehyde in your milk or borax in your butter or salicylic acid in your wine? And you might say well I don't wanna have that several times a day, right, I want to protect myself from that. Couldn't we at least get the information out? And that also is shut down at the federal level. But you do start to see, and you're absolutely right, this growing awareness that fraud is not disconnected from public health.

Erin Welsh

I think what is so amazing about your book is how Wiley comes alive as a person. And you mentioned how you have this incredible wealth of source material about his life and correspondence and stuff like that. And so what sense of his personality did you get that may have made him a more righteous crusader for this cause?

Deborah Blum

Yes. So I always kind of think of him as a holy roller chemist, right. His degree in chemistry was from Harvard, he was trained in that and actually in medicine, his dad was an itinerant preacher and a conductor on the underground railroad in Indiana where he grew up. And he was raised in the idea that we are put on life to do good. And you'll see even in his early writings, this question of chemistry in the service of mankind and science and the service of good that tended to sort of pervade the way he thought about what he did from the beginning. And that grows, he starts out in a lot of ways as a just a well trained analytical chemist, he helped actually found the American Society of Analytical Chemists, right, he does a lot of this analysis himself. But as he gets more into the issue of food and food integrity, the sort of holy roller, 'this is not acceptable, we have to change this' side comes out.

And even in these reports that I'm telling you about, in the conclusions they get more and more 'this is not acceptable, this needs to change'. So you see him kind of growing into this role and he grows into it, he works with congressmen who are trying to introduce food safety legislation which fails repeatedly. He becomes part of the greater American community of food safety advocates. At the time this was referred to as the pure food movement and there are pure food Congresses, right. And it's pretty fascinating, how do we define purity? Then he becomes involved in those Congresses and talks at them. He helps create public exhibitions of adulterated and tainted food at World Fairs. I kind of love that, at the Chicago World's Fair of 1893, which was the Columbian Exposition, he does it at the World's Fair in New York and he comes back and does a huge one at the World's Fair at Saint Louis. So he also is trying to do the other thing which is get this information out to the public.

	And he is a fascinating person for his time, right? He does a lot of work with women's organizations which is uniquely smart because women don't have the vote at this time, right. You might argue as a man of the time that women have no political power and they're not worth my time, and many men did. He saw the women's organizations as incredibly powerful and influential in getting information out. And this would put him at loggerheads with his bosses in the federal government. But he believed that it was consumer over business. From the beginning you see this driving him in a way that we don't always see this driving the decisions of the US government, the American consumer, whether that consumer be rich or poor, against the wealthy corporations that are the financial backbone of the country, let's say would be the government's stance. Wiley is the consumer every time. And that both drives the way he approaches this issue, helps define some of the early approaches, and limits his power because this is not a position that is universally held at the national level for sure.
Erin Welsh	Yeah, absolutely. He is such a fascinating person. We're gonna take a quick break here and when we get back, I wanna talk with you about his most famous experiment, the poison squad.
TPWKY	(transition theme)
Erin Welsh	Welcome back everyone. All right, we've been having some great conversations about the horrifying state of food around the late 19th and early 20th centuries. And now I want to chat with you about the title of your book, 'The Poison Squad'. And this comes from the name given to the project that Wiley put together to determine what could be considered quote unquote "safe" levels of certain additives to foods. Can you take us through this experiment and what was learned from it?
Deborah Blum	Sure. So as I said, we have this dismaying landscape of food additive and adulteration with no regulation and really very little scientific study of these additives that are going into food. That was one of the things that was interesting to me when I went back into the scientific journals of the time and I'm looking for well who was studying formaldehyde, who was studying borax? And it's like almost nobody and there's almost nothing. And so when Wiley is arguing that these things are not safe, he doesn't have the data to back that up. So this brings me to my original question, why would you be so desperate? He's been trying for more than a decade to get some kind of safety regulations passed unsuccessfully and he finally decides it will never happen until we have some basic data driven scientific understanding of whether these are risks or not. And he persuades Congress to give him a small amount of money for a study that he called the Hygienic Table Trials. It's a wonderfully Victorian term. And that of course the Washington Post found completely boring and renamed The Poison Squad for reasons that will become obvious.
	And so the basics of this is that he recruits young healthy men, this is kind of an idea of the time, he wanted to have what he thought was the healthiest human specimens because he didn't want them to die, right. Let's not poison already sick people. So young men in their 20s, most of whom were then college athletes, most of these are underpaid clerks at the US Department of Agriculture. And so he offers them a minimum amount of money and three meals a day, seven days a week. And the catch is they get these wonderful meals but they have to be rigorously monitored, all kinds of doctors poking and prodding at them, and they have to split the group into two. And so they basically have two tables of young men, about a dozen at each table or so, maybe a little less depending on what they were looking at, and one table is eating in fact ideal farm fresh food, all of this food was untainted, they got it from local farms, they used canned goods when they had no preservatives, they hired a professional chef. This is amazing, wonderful food.

But at table A, that's all they're eating. At table B, they're reading that but they have to also swallow capsules with an additive that Wiley is studying at the time and he is during the course of the study of each individual additive gonna ratchet up the dose. And so he has a list of additives he's interested in. Formaldehyde was one of them, that one they had to call early because people got so sick so fast, they just quit. But they also had borax, they had copper sulfate, that's a heavy metal that was used to turn peas and canned peas and beans greener. They had a whole list of these things. Salicylic acid, right.

And they started with borax because they believed that that was basically an entry level additive. They didn't think it was that dangerous. Borax you can still find today, you'll see it in the cleaning section of your grocery store. It's 20 Mule Team Borax, that's exactly what people were eating every day. It was used in butter, it was used in meat. I mean you could get like multiple doses of borax every day at the time. And had never really been studied. So he started with borax. And later when they had a congressional hearing about borax, he said borax was sort of the study that made him realize just how dangerous things were because he had not predicted the these young men would get sick and some of them got extremely sick and the longer they were taking these concentrated levels of borax, the sicker they got. And when you look at the newspaper coverage of this study, you'll start to see this sort of change in the public discussion of food additives.

They're not calling them additives, they're calling them poisons. The New York Times is calling them poisons, the Washington Post is calling them poisons. And because this study is so strange, right, young men volunteering to be the stomach of American and essentially try out these dangerous things, it gets a huge amount of coverage. It's front page news, there's poems written about the poison squad, there's all kinds of amazing and wonderful cartoons. It becomes this sort of cultural phenomenon. So people are starting to follow this and probably as much as the science, which is pretty primitive science, right, like you can go back at the way we do human clinical trials today and go seriously? You didn't have a control group? Right, you didn't do this, all of the different things that we would do now. I mean he did have a group that wasn't eating the poisonous things but it was fairly small and random compared to what we would consider a reasonable study today.

But it was a shocker to the United States. It was a shocker to Wiley and it was a shock to everyone else. And so as he starts going forward through these other additives, you see this continued drumbeat of publicity and you see the recognition by American industry and also by the friends of American industry and the government. This is bad news, this is not serving the interest of unfettered manufactured food. And so Wiley becomes a huge target. And not that he had been beloved but following these studies, the number of smear campaigns and attacks that come up against him just amplify. And in fact some of his bosses at the US Department of Agriculture, responding to industry pressure, start suppressing some of these studies and won't let them be published because they think that they are are too damaging to American industry. So this study which is very primitive science, very influential in public opinion ways, also puts them at loggerheads with the powers of the US government and industry.

Erin Welsh

And is this fight for food safety, it's not just Wiley against industry or Wiley against corporations, there were major players on both sides of this. What were some of the groups that were aligned with Wiley and this fight for safe foods?

Deborah Blum

Sure. So there was the women's groups as I've mentioned and you see really famous early women advocates like Jane Adams getting out there and trying to educate women. Wiley worked very directly with the women's clubs of America. They actually, Alice Lakey, who was the leader in that movement, actually persuaded him to have the chemistry department, his chemistry bureau, publish a book on experiments the home cook can do. They're almost when you read it and they're telling you how to guard yourself against sulfuric acid burns, you're thinking okay, wait, right? This is pretty nuts.

But all kinds of ways to get this out there. He worked with food advocates in the pure food group. There was the magazine What To Eat, so there were publications that were really dedicated to this. I should mention that because I had mentioned that there were state laws that passed, that the states were very active in trying to get the federal government to respond to this and setting rules that were far beyond what the feds were willing to do and to put pressure on the US government to try to come up with some, instead of this scattershot approach, come up with some of this comprehensive kind of legislation.

And it's interesting as a portrait of the time because the most progressive states were states that we often think of as red states now. The Dakotas were leaders in the fight for better food rules, Kansas was, Texas was, right. Wisconsin was. And so this is a period in which it's a very different political map. My book is focused on Wiley and his fight and he sometimes described himself as a general in this fight. So I want to pay tribute to all of these other people without whom this would not have happened. The suffragette movement got involved in this fight, the prohibitionists, the Women's Christian Temperance League got involved in this fight. Wiley in fact married a suffragette, right, which is one of the reasons that we actually have so much information about his internal dealings because she was also a librarian at the Library of Congress and donated all of his papers.

But he used every possible ally that he could get. And it's really amazing when you look at the telegrams that are coming into the White House and to the Department of Agriculture to realize how many people kind of across the spectrum of American life recognized that this was important. And I want to say, although industry in general hugely opposed what he was doing, that wasn't entirely true. The American Canners Association backed him because they were really concerned about how toxic their products were starting to be. There were major food manufacturers like Henry Heinz who got involved on his side and actively worked to develop better versions of food, a ketchup that used no preservatives, I mean Henry Heinz is famous for that. And so it is a fascinating patchwork of people who come together fighting for this.

Erin Welsh

It was interesting to read about how there was suppression of these reports and the government was, everyone was saying one thing but voting a different way. But eventually over time, thanks to things like the poison squad, thanks to things like the formaldehyde in milk and the embalmed meat scandal, there seemed to be like the tide was turning. And then there was also Upton Sinclair and 'The Jungle'. So how did that come into play during this discussion of food safety?

Deborah Blum

I love the story of Upton Sinclair and 'The Jungle', right. And I should mention, one other group that I should mention was American cookbook writers, which I just love that. People like Fannie Farmer would write into their cookbooks 'of course you can't really try milk' or 'just be aware that when you're putting pepper, it may not be pepper'. I mean it's kind of like there's this wonderful underground of education of women through the cookbook authors of the time, it's really fascinating. And so all of this is simmering along and there's this growing sense of unhappiness and outrage in the American public but not enough to really force Congress to do anything. And that's where Upton Sinclair comes along with 'The Jungle'. I mean 'The Jungle' is a fascinating story because it's a novel that is based in journalism. And one of the reasons of course that it had so much influence was that it is in fact based on on the ground journalistic research that Upton Sinclair did.

And so 'The Jungle' is the story of a poor immigrant family working in the meatpacking industry in Chicago and their travails and trying to survive in this capitalistic jungle which was how Upton Sinclair saw the book. He would later after 'The Jungle' came out make this famous statement that he had aimed for America's heart, the plight of the worker, and hit it in the stomach instead, the horrors of American food production. Which is true. He was involved with kind of the muckraking group of investigative journalists based in New York. So when he decided to write his serial novel, he went to Chicago, stayed at a settlement house, and just embedded himself with the meatpacking workers in the packing houses, the famous packing houses of Chicago like Armour and Cudahy and their ilk.

And he took lots of notes and did lots of research and then went back and wrote this book in which what happens is he is telling the story of this beleaguered family working in the packing houses but it's set against this background of the horrors of meat production which had certainly horrified him. And he publishes this first in a socialist newspaper out of Kansas, as I said, the politics are very different, Kansas was a hotbed of American socialism at the time. And then he worked to get it published as a book and his first publisher was so horrified by this that he bailed. But a publisher then called a Doubleday Page picked it up. And what's interesting about that is they agreed to publish it but they fact checked it. They sent the editor and one of their lawyers to Chicago, they came back and said ugh, it's worse than in the book. And the book is gruesome, right? It has mold-covered meat that's washed off and goes into the hands, it has rats, all of this based on his experiences, they're poisoning rats with poisoned bread and the rats go into the sausages.

In 'The Jungle', this was never proved to be true, a worker falls into one of the live vats and ends up in the potted ham or the lard I think, Anderson's Pure Leaf Lard which was his pseudonym for Armour. And so there's horrifying blood-spattered walls and all of this stuff. So it was bad in the novel but these guys come back and go oh my god, it's worse. It's worse than the factories, right. So they fact check the book, they publish it, it becomes an instant bestseller. Everyone's horrified. The meatpacking industry and their buddies at Congress are just trying to point out that Upton Sinclair is a socialist and therefore completely untrustworthy. But it becomes such a furor that Teddy Roosevelt sends his own fact checking came out. That's to me is what's so interesting is all the people who go out and fact check this. They come back, they do a report which has never been published because apparently it's so damning.

And my understanding is this report is buried in the archives of the National Agricultural Library in Beltsville, Maryland. But I never saw it. But basically Roosevelt says to Congress, okay, I want a Meat Inspection Act. And if you don't give it to me, I'm gonna publish this report. And they say, bolstered by all the money they're getting from the meatpacking industry, this is such a shocker but Congress is incredibly influenced by the money it gets from large corporate donors at this time period, they won't pass this law. So Roosevelt releases is a few select pages and these are so bad that everyone in Europe instantly cancels all their meat contracts with the United States. And at that point, the meat industry itself is like oops. They permit Congress to pass a Meat Inspection Act. And when the Meat Inspection Act of 1906 passes, it pulls across the line that very battered Food and Drug Act that Wiley has been working on for years. And so both of those laws, the Meat Inspection Act and the Food and Drug Act pass in June of 1906.

And this is a paradigm changing moment because it's not just that we've passed a Meat Inspection Act and a and a Food and Drug Act, it's that we have set a precedent in which the US government is now officially declaring consumer protection as its business. That's never happened before. That is the first time that the US government agrees that when we say in the constitution 'promotion of the general welfare', we actually mean protection of American citizens in their everyday lives. And on the precedent of those two laws comes everything that follows, OSHA, the EPA, every consumer protection agency that follows is built on this battle to have food safety introduced into the United States. And when I came to that realization, which I hadn't realized until I did all of this, it was a wow moment for me. Wow, this was such a big fight with such important consequences.

Erin Welsh

On the one hand, 1906 feels like so long ago. But on the other hand, that was actually quite late in comparison to a lot of countries in Europe who had long since recognized the need for legislation protecting consumers and making sure that food was safe to eat. Why do you think the US lagged behind much of Europe in these types of laws?

Deborah Blum

Yeah, we lagged behind Canada too. Canada had a national food safety law before we did. I mean there were a couple of factors. One of them is actually the Civil War. In this period in the late 19th century, there is bitter mistrust between northern and southern states. And the southern states vote as a block against any effort by the federal government to dictate to them how their people, the Southerners, live their life. And so you see this come up actually in the discussions of these food and drug laws, we're not going to have this Yankee government tell us what to do. So that was part of it, just the timing of those divisions.

The other part, and it's something you'll also recognize today, is that there's this American ethic of individual rights. And in fact some of the chemists beyond Wiley who were working and advocating for federal food safety laws, they brought this up in the 1880s. We run against this bedrock resistance in which individual rights trump collective good. And so that also I think hugely held us back in that sense. And I think probably some of it was the economics of the time. This is a time of boom growth and acceleration and industrialization, we're reaping wealth and status because of that. Why would we want to hinder that? And that's how people saw it. Not let's make better, safer, smarter products, but we will be hindering the titans of industry, right. All of that I think went into this huge resistance by the United States.

And we did lag. Britain passed its first food safety law in the 1860s, Germany and France in a very similar time period. You do see in this period and even after moments where the European countries, not just in the horrible scandals revealed by 'The Jungle', were like we cannot import this American product. Or even I was talking about the use of salicylic acid. Salicylic acid makes your stomach lining bleed, you do not want it in something you drink every day, right. So Germany had two sets of rules. They forbade the use of salicylic acid in their beer for their own countrymen but they permitted it as a preservative of beer that they sold to the United States because it was allowed here. So we just lagged behind for all of those reasons, some of those reasons still being at play today, American individualism, the tilt toward captains of industry, right, that we see today.

Erin Welsh

Oh absolutely. And we've come a long way, we've made incredible strides since Wiley's law or the Pure Food and Drug Act of 1906. But there are still issues with misrepresentative labeling or a lack of transparent labeling or just food safety in general. What are some examples of some of the ways that you think we could still improve in terms of food safety here in the US?

Deborah Blum

So you're right that labels are not entirely transparent. I mean two of my favorite examples of that are the permission for manufacturers to use the term natural flavorings, which are often not natural and sometimes toxic, but you don't know what they are. There's no information about that. Or one of my favorites, I don't think this is so much of a safety issue as much as a don't alarm the American consumer example, but if you ever buy say a bag of shredded cheese or it's ilk, you'll see reference to cellulose. What is cellulose? Cellulose is wood pulp. And so I say to people the manufacturers do not want to put wood pulp in their label, right. The US government permits that. I myself feel that I would like to know if I'm eating oak or pine with my cheese. And I totally believe that given some of the non transparencies of issues, it is unfair to expect the American consumer to defend themselves against every issue of food safety of which there continue to be many in this country. There's no way for us to keep up with them or to be fully informed on them.

I mean I have argued for geographic labeling of rice for instance, because rice can contain naturally occurring arsenic. There are areas where the arsenic is more concentrated, say in the American South, I would like to know if my rice comes from the American South or somewhere where there's less arsenic in the soil. You can't even get that onto labels. And so all of the ways that if we just had a little information or were better informed, we could defend ourselves, are denied to us because of these issues of non transparency. We have labels and the labels are a whole lot better than no labels and they've been updated, they were updated in the George W. Bush administration for better nutrition information. And they've been improved but could they be better? Absolutely. Do people look at a label on that list of ingredients and have any idea what it means? No.

So I don't know that we need encyclopedic labels but I think labels that are easier to understand would be an excellent point. And we do know, speaking of lags, that there are a lot of compounds that are permitted in American food that are banned in Europe to this day. Titanium dioxide being a good example of that, banned by the EU, permitted in food in the United States as a coloring agent. People don't actually even know that. And so there's all kinds of ways that I think we do need to be a better educated public and the system is non transparent to that degree. So I think that's part of it also, we don't keep food entirely safe has been clear by a whole lot of series of contamination issues with bacteria. Those are bigger picture issues.

We don't for instance entirely regulate the the water supply going into crops, which is one of the reasons we see some of these bacterial issues coming up. And people die, right? Salmonella is a bad bacteria. People are injured, people die. And so is it as bad as it was in the 19th century? Is it not? Is it acceptable? CDC estimates at least 3000 deaths a month and well over 100,000 illnesses of which we don't always even identify the source of those foodborne illnesses. Recently there was a suggestion, I've seen it both in the Post and elsewhere that we pull the food safety division out of the FDA entirely, combine it with the USDA food Safety division and make a department that would really be dedicated to food safety and actively concentrated on just protecting the food supply and decently fund it.

Thanks to the way the Meat Inspection Act came about and the Food Safety Act came about, Food and Drug Safety Act, the meat inspection, the US Department of Agriculture has a whole lot more money for food safety than the USDA does, a lot. And that really has to do with the fact that meat was the scandal of the time, right. And those funding mechanisms were laid down in 1906 and they plague us to this day. The USDA is hugely well funded on this front, the FDA is usually underfunded. We really need to say let's set aside all of that partisan argument of more than 100 years ago and build a modern food safety protection network and enforce the laws we have, which we don't always do at all. So I feel very strongly about that.

Erin Welsh

Do you think that food safety policies are by nature reactive or can they ever be proactive?

Deborah Blum	It's a great question and you're absolutely right that we tend to be reactive rather than proactive. And if I just take the history of food and drug legislation, for instance, the 1906 Food and Drug Act was heavily watered down by industry and by its buddies in the US government. But something, it lays down a precedent, right, it starts the issue. It's completely inadequate. And so in 1938, following a scandal in which hundreds of children are killed by a poisonous cough syrup that's permitted under the 1906 law, we get the 1938 Food Drug and Cosmetics Act that establishes the modern FDA. That is a reactive. People have been pushing for this for obviously more than 20 years or more than 30 years, right? But we get it when children die. In the 1950s we get the Delaney Clause, 1950s-1960s, which deals with toxic food dyes, that is reactive to children who got sick from toxic food dyes. And this continues onward and the one most recently that's worth mentioning is the 2011 FSMA, the Food Safety Modernization Act, that passed under Barack Obama and that was a reaction to the Peanut Corporation of America scandal in which peanut butter was so contaminated with molds and toxins that it killed a whole lot of elderly people before they actually figured out that this particular company was getting away with 19th century factory standards in fact, right. It's one of the few cases in which the head of Peanut Corporation of America went to prison, it was that bad. But reacting to that spurred FSMA. And then of course the Trump administration refused to enforce FSMA.
	So my point that we have some decent laws on the book, most of them are generated reactively, we're in a great position right now to be proactive. That doesn't mean that I think we will but we are in a great position at this moment to be proactive. There have been a lot of food safety scandals recently related to the FDA, baby formulas being one example, the repeated incidents of bacterial contamination in food, there continues to be adulteration and fake products that we barely even hear about but are in the American food supply today. And so this would be a great moment at the national level for our leaders, if they're not distracted by everything else that's going on at the national level, right, I say, to say let's get this right. Let's take a moment, let's not be reactive. Let's proactively put a decent system in place more similar to the, in fact I would argue the EU system, which is much more proactive, and say this looks dangerous, let's take it out til it's proven safe. And I believe that Harvey Wiley would believe that too. I believe that his ghost would stand up and say come on, right? Let's get this right at long last, we have the tools to do it, we just need the will.
TPWKY	(transition theme)
Erin Welsh	That was just so amazing. Thank you so much, Deborah, for taking the time to chat. I don't know if I'll ever be able to get the images of some of these adulterated foods out of my brain. If you all enjoyed this as much as I did and want to learn more, check out our website thispodcastwillkillyou.com where I'll post a link to where you can find 'The Poison Squad: One chemist's single-minded crusade for food safety at the turn of the 20th century'. I'll also post a link to Blum's other work, including 'The Poisoner's Handbook' and the Poison Squad PBS series. And don't forget you can check out our website for all sorts of other cool things including but not limited to transcripts, quarantini and placeborita recipes, show notes and references for all of our episodes, links to merch, our bookshop.org affiliate account, our Goodreads list, a firsthand account form, and music by Bloodmobile.
	Speaking of which, thank you to Bloodmobile for providing the music for this episode and all of our episodes. Thank you to Lianna Squillace for our audio mixing, and thanks to you, listeners, for reading with me. I hope you liked this second to last episode of the TPWKY Book Club. And a special thank you as always to our wonderful, fantastic patrons. We appreciate your support so very much. Okay. Until next time, keep washing those hands.