

Sawbones 255: Rocky Mountain Spotted Fever

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Intro (Clint McElroy): Sawbones is a show about medical history, and nothing the hosts say should be taken as medical advice or opinion. It's for fun. Can't you just have fun for an hour and not try to diagnose your mystery boil? We think you've earned it. Just sit back, relax, and enjoy a moment of distraction from that weird growth. You're worth it.

[theme music plays]

[audience cheers]

Justin: Hi, I'm Justin McElroy! Whoa, listen! They're goin' crazy for it!

[audience cheers]

Justin: Man. This time, they're the loudest for me. Huh! [high pitched] Huh!

Sydnee: I didn't—I didn't—you didn't do the—I haven't done me. I haven't—you didn't—do the thing!

Justin: Hey, everybody. Welcome to *Sawbones*: a marital tour of misguided medicine. I am your cohost, Justin Tyler McElroy.

[audience cheers]

Sydnee: And... I'm Sydnee Smirl McElroy.

[audience cheers louder]

Justin: It's bracing. It's bracing.

[cheering continues]

Sydnee: [laughs]

Justin: It's bracing.

[cheering continues]

Justin: Okay. Um...

[scattered cheers]

Justin: So, we're sorry—uh, what's up, Denver? What's up? Hey.

[audience cheers]

Justin: Wow, excitable!

Sydnee: So excited, I love it!

Justin: Sorry about the hold up gettin' started, but we hadn't run late—uh, started late, you wouldn't have heard that awesome Har Mar Superstar track. So... worked out for everybody, I guess.

Um, Syd.

Sydnee: Yes.

Justin: Uh, we try to go thematic.

Sydnee: Yes. Whenever we go on the road.

Justin: Mm-hmm.

Sydnee: As it were.

Justin: Yes.

Sydnee: And, uh, we—so, whenever I started asking people, like, "Oh, we're gonna do a show in Denver. What medical thing... when you think of—"

[audience laughs]

Sydnee: "—Denver, Colorado—" yeah. Every—everybody says weed, y'all. [laughs quietly] Everybody. Which—which is great, except one, we already did an episode on... on marijuana. Sorry! We already—we did that already.

And two, like, you guys all just do it for funsies here. So...

Justin: Yeah.

Sydnee: [through laughter] It's not *all* medical.

Justin: Yeah. It's—you're just gettin' high.

Sydnee: [laughs] Which is totally fine.

Justin: Hmm...

Sydnee: But that's not the show.

Justin: As people who hail from a state that still respect the vision—

Sydnee: [laughs]

Justin: —of our forefathers...

[audience laughs]

Justin: ... when they made weed illegal... uh—

Sydnee: [through laughter] You me—you mean a state—

Justin: —it is distasteful.

Sydnee: —a state that—that legalized medical marijuana last year, [holding back laughter] but has no dispensaries, so it doesn't matter! It's just legal in name only. [laughs]

Justin: Uh...

Sydnee: I know! It's a bummer!

Justin: So we didn't do weed.

Sydnee: No. So, Justin and I started talking. What else could we—what could we do? And we came up with... Rocky Mountain spotted fever!

[scattered cheers]

Sydnee: [holding back laughter] 'Cause Rocky Mountains.

Justin: Sounds good, right?

Sydnee: [simultaneously] Right?

Justin: They're right there. When you make your world-famous, beloved Coors beer—

Sydnee: [laughs quietly]

Justin: —the—you're tapping the Rockies. I hear all about it. So we assumed that that would be... Rocky Mountain spotted fever would be, like—you'd b—one out of every three people here has gotta have it. [wheezes]

[audience laughs]

Justin: [through laughter] You assume, right? That there's gotta be, like, clinics at—that's why they made weed legal, for all the—

[audience laughs]

Justin: —[laughs breathlessly] Rocky Mountain spotted fever.

Sydnee: It's not a treatment. [laughs] Uh, so I did all this research. I found all these neat stories about it, and among—in my research, among the facts that I discovered about Rocky Mountain spotted fever [holding back laughter] is that it almost never happens in Colorado.

[audience laughs]

Sydnee: It's incredi—which is great. I mean, that's good for you guys. But it's incredibly rare here, so I just feel really... [holding back laughter] excited about that.

Justin: Congratulations, Colorado.

[audience cheers]

Sydnee: It's actually—what's really interesting—it's completely misnamed, because it doesn't really even occur very often in the Rocky Mountains anymore. Like, it can, but it's mostly in the South and Southeast United States. So.

Justin: So what is it?

Sydnee: Okay. Well, first of all, several people recommended this. Heather, Kendra, and Britney, thank you.

And, uh, Rocky Mountain spotted fever is a bacterial infection. It's caused by an organism called *Rickettsia rickettsii*.

Justin: Whoa!

Sydnee: Mm-hmm. Which is—

Justin: That's good!

Sydnee: —it's named for a dude, which—we'll talk about the dude.

Justin: Did he put his name in both of 'em?

Sydnee: He did!

Justin: Nice.

[audience laughs]

Sydnee: Both. Mm-hmm.

Justin: My man! Alright!

Sydnee: It's his bacteria. Um, it's carried by ticks. There are different species of ticks that can carry it, but the most common are the American dog tick, and the Rocky Mountain wood tick, and you do have those ticks here. It just—they don't tend to carry Rocky Mountain spotted fever, which is good.

The tick is both the vector and the host, which is kind of interesting. So, like, it carries it around for its whole life. It's not taking it from one human and giving it

to another, although it *could* do that. It just carries it. It's infected with it, and then it can pass it along to its little tick babies.

Justin: Great.

Sydnee: You know. [laughs]

Justin: Gross!

Sydnee: And then on to people. About 1-2% of these ticks are infected, so it's fairly rare, which is a good thing. Um—

Justin: One time I got back from camping and I thought I had marshmallows stuck in my hair, and I sat on the couch when I was, like, 12, watchin' *Darkman*. Remember that one? I was watchin' *Darkman* the movie and fiddlin' with this marshmallow like, "Man, that marshmallow's *really* in there."

And then I finally pulled that chunk of marshmallow out of my hair—you know, s'mores. I thought it was some s'mores.

Sydnee: [sighs]

Justin: Finally pulled the chunk of marshmallow out there, and the tick's legs are still wiggling, and I'm like—

[yelling and groans from audience]

Justin: —so I don't like ticks now. Now I'm against ticks.

[audience laughs]

Sydnee: Did you like ticks before?

Justin: Agnostic. No.

[audience laughs]

Justin: I did believe in ticks.

[audience laughs]

Sydnee: [laughs]

Justin: [through laughter] Ambivalent. I was ambivalent to them.

Sydnee: [through laughter] The thing about ticks is they exist, whether or not you believe in them, so...

[audience laughs]

Sydnee: Uh, the symptoms, should you ever be unlucky enough to get this, are—well, a fever. That's... that's in there. Um—

Justin: [laughs] Dead giveaway!

Sydnee: —yeah. Uh, some nausea, some vomiting, you can get aches and pains all over in your muscles and your joints, and an upset stomach. Um, and then you also get the rash. That's where the spotted part comes from. And it's an interesting rash, [holding back laughter] if you think rashes are interesting, and then it starts—

Justin: At least half the people on this stage certainly do!

Sydnee: Mm-hmm.

[audience laughs]

Sydnee: It starts on your hands and feet and move inward, and it can—it can occur on your palms and soles, and there aren't a lot of rashes that can do that.

Justin: Hmm, fascinating! For some.

[audience laughs]

Sydnee: [laughs quietly] The big deal with Rocky Mountain spotted fever is that it can lead to very serious complications, and even death in some cases. Not so often these days, but back on the American frontier, it very often did. And so that's where we're gonna focus, because it was first documented all the way back in the 1800s.

Back then, a lot of different names for similar diseases probably overlapped, so they called it a lot of the time Black Measles, because the rash can get, um—the rash is petechial, which is, like, broken little blood vessels under your skin. And they can, like, get darker, so it looked like measles, but really dark.

Justin: Petechia is a—you get those on your nose? Those—gin blossoms? Is it the same thing?

Sydnee: No, those are different.

Justin: Or are they spotting on your face when you throw up? Is that petechia?

Sydnee: If you throw up too hard—yes.

Justin: [dunking noise?]

Sydnee: Good job!

Justin: [through gritted teeth] Yes!

Sydnee: Good job!

[scattered cheers]

Sydnee: You're learning things! Uh, this also could've been called just Mountain Fever. There are a lot of different tick-borne illnesses, as well as just other random things that settlers got, and they kind of called 'em all the same thing. So when you hear old descriptions of Black Measles or Mountain Fever or Typhoid, Typho-malaria, all these different names, they could—I mean, who knows what they really were. They were one of these—this variety of diseases.

This was one of the most feared among settlers, because if we went back and did statistics at the time, it had up to, like, a 30% mortality rate, so this was a really scary disease to get on the frontier.

Justin: Dang.

Sydnee: It doesn't now. don't worry. Um, the—nobody knew why people got it. They knew they went into the mountains and then they got sick, and so they came up with a lot of.. odd theories as to why that might happen.

One of the most popular was that if you drink melted snow...

Justin: Huh!

Sydnee: ... you'll ge—you'll get this. Um, it also—I saw one, uh, one doctor comment that they thought it was that all of these lungs that weren't used to breathing pure mountain air—[laughs]

Justin: Yes.

[audience laughs]

Sydnee: —did for the first time, and then got sick.

Justin: It's too good.

[audience laughs]

Sydnee: [holding back laughter] The air is too good for us. Have you felt that since we've been here?

Justin: [inhales deeply] Mmm! I can't handle this air! Where's the coal?

[audience laughs]

Sydnee: Uh, this—obviously, since nobody understand why people were getting sick, it led the way for a lot of quacks to come and pitch whatever their wares were for you to buy, or—one of the most popular things doctors would do—well, *doctors*, you know. [laughs quietly] People who called themselves doctors—would do is [holding back laughter] offer to test your water, your snow runoff water, to see if it had the Rocky Mountain spotted fever in it, and then they would give it the clear. They had no way of doing this—

Justin: [laughs]

Sydnee: —so this was all completely made up. Um, but they would take a lot of money from you to do that. Uh, and then just either say, like, "Don't drink that!" Or, "Nah, that seems fine."

Uh, there—[laughs] there were—

Justin: They would test your snow?

Sydnee: Well, like, melted snow water. Like, runoff.

Justin: Okay. Sure.

Sydnee: Yeah. It was specifically that water.

Justin: Okay.

Sydnee: I mean, they were wrong. It wasn't.

Justin: Perfect.

Sydnee: It was... ticks.

Justin: Yeah, I mean, it doesn't really matter, right? Like, I'm challenging them now. They're dead. Long dead.

[audience laughs]

Sydnee: Um... [laughs quietly] at this point in history, homeopathy was alive in well in the—

Justin: Yay!

Sydnee: No.

Justin: Where's the round of—huge round of applause for—

[scattered cheers]

Justin: —our great friend... homeopathy!

Sydnee: —on the American frontier, and so there were a lot of, like, kind of poisonous—but then you'd take the poison and you'd dilute and dilute it and dilute it until it's really just water that you could prescribe for any of these fevers that people got.

And one in particular that was [holding back laughter] very popular was the venom from a dagger headed viper that is only found in Brazil, so you can't find this, and then dilute it, dilute it, dilute it, dilute it.

Justin: Luduludulu.

Sydnee: Until it's water.

Justin: Pointless. Yeah.

Sydnee: [holding back laughter] And that was a very popular cure. Which—you had to wonder, like, the guy who was selling this—like, how do you get all these... snakes here?

[audience laughs]

Justin: [stage whispers] Psst! He was lying!

Sydnee: Well, yeah—no, I mean—

[audience laughs]

Sydnee: [laughs] I know that. Um, quinine—we knew quinine worked for other things that caused fevers by now, so—like malaria, so why not for any kind of fever? So that was very popular.

Um, whiskey, as always.

Justin: Sure. Classic.

Sydnee: Great treatment.

[scattered cheers]

Sydnee: Why not! [holding back laughter] Uh, strychnine was very popular. Um, there was something called Dover's Powders that a lot of people used? And Dover's Powders was a specific patent medicine, so just a medicine that a guy made and sold to a lot of people, and most patent medicines contain something that was either narcotic or just made you, like, drunk, like alcohol.

Uh, this contained ipecac, opium, and, uh, morphine. [laughs]

Justin: Whoa!

[audience laughs]

Sydnee: So...

Justin: That's legit! "I'm throwing up, but I feel *great* about it—"

[audience laughs]

Justin: "—and also, who could use a nap? Because..."

Sydnee: Now, a lot of—a lot of people just had no idea. They didn't have access to these medicines, and so there were just like, "I don't know. Drink a lot of water. Take a sponge bath."

People were really desperate, and so the—the state of Montana was suffering the most from Rocky Mountain spotted fever, and so when it—well, when it became a state in 1889. I know that fact now.

And, uh, by 1901, like, soon after they became a state, they had set up a board of health specifically to address this problem. They wanted to try to get doctors to come. They were like, "Look, we got a lot of sick people here! [laughs] You got nothin' else to do! They'll buy your medicines, whether they work or not! Please come, we need your help."

So they started attracting doctors, and among them was Howard Taylor Ricketts. *Rickettsia rickettsii*.

Justin: Ohhh, right.

Sydnee: And, uh, he became involved in the search for what was this? And they already had this idea that maybe ticks were responsible, because there was this one documented case where a doctor was unfortunately doing an autopsy on a patient who had succumbed to Rocky Mountain spotted fever, and he found a tick in his pubic hair. [laughs quietly] And, like—and this poor guy—like, this is what we remember about him, is that he had a tick in his pubic hair, forever! This is what I know! [laughs]

Justin: Alright. Straight up, but, quick note... you can give me a pass for not realizing there was a tick in my hair. You—[sighs] you're gonna—you should notice...

[audience laughs]

Justin: You—you sh—you should notice a tick in your.. I know religious mores were different at the time, but...

[audience laughs]

Justin: ... you should notice a tick there.

Sydnee: [laughs]

Justin: You should notice that.

Sydnee: Well, he didn't. Tragically.

[audience laughs]

Sydnee: Although—

Justin: Maybe the gene pool without this particular individual is... a little bit cleaner.

Sydnee: Justin!

Justin: I'm just saying!

Sydnee: No, because—

Justin: You should notice a tick in your pubic hair.

Sydnee: [laughs] To be fair, unlike—this is something I should've mentioned. Unlike with Lyme disease, which is spread by ticks, and they tick has to be attached for quite a while to get Lyme disease, with Rocky Mountain spotted fever it doesn't. You can actually get it pretty quickly from the tick, so... you know.

Justin: Maybe the tick... left?

Sydnee: Maybe it was—no, I'm saying maybe it was only there for, like, an hour. Probably not. [through laughter] 'Cause he died of Rocky Mountain spotted fever, so it wasn't. It was there for a long time.

Justin: So—so the tick—

Sydnee: [through laughter] It was there for several weeks.

Justin: —the tick no-scoped this dude.

[audience laughs]

Sydnee: I'm just saying!

Justin: [through laughter] Like, the tick's like, "What's up! You're dead! Byeee!"

[audience laughs]

Justin: And now—I'm sorry, Syd. Sir, did you say *several weeks*? Scusie?!

Sydnee: Pro—pro—I mean, it could—well... at least a—probably a week incubation—

Justin: Come on!

Sydnee: —and then—no, it could've been as little as 10 days.

[pauses]

Sydnee: Yeah.

[audience laughs]

Justin: [wheeze-laughs] That's too much, though!

Sydnee: [simultaneously] Maybe. I don't know.

Justin: When you said "To be fair," I thought you were gonna say "Back then, pubic hair was made of ticks." Like, that's the only—

[audience laughs]

Justin: —that's the only excuse.

[audience laughs]

Justin: You gotta notice that. Listen, there's not a lot of medicine. You're gonna have to meet science halfway, such as it is, and *you've* gotta notice the ticks in your pubic hair, old-timey people.

[theme music plays]

Justin: Hey, everybody! We hope you're enjoying this episode, uh, live from Denver. Thanks to all the Broncos who came out. I don't know if anybody there was on the team, but... they looked like they could handle themselves on the gridiron. A lot of people there.

Sydnee: I thought you meant actual broncos.

Justin: No. They don't let horses into the theaters anymore. We had a issue that we've since addressed. But, uh, we wanted to break in for a brief minute to talk to you about our sponsors for this week. Syd, who do we have up first?

Sydnee: Uh, well, our sponsor this week is Stitch Fix. I love Stitch Fix. I am—in the live episode that you're hearing, I am wearing my favorite jeans from Stitch Fix, and in this ad that we are later recording, I am wearing a shirt that I love from Stitch Fix.

Justin: Yeah.

Sydnee: Crisscross top, perfect for this unseasonably warm winter day.

Justin: We've—uh, we had a package on the front porch, and Sydnee got all excited because she said, "I'm waiting on a Stitch Fix. I really hope that's it, 'cause I'm lookin' forward to that."

And she does! She looks forward to it. What they do is they—you send 'em your measurements and some information about your style, how much you pay for certain garments, your preferences, and then they ship you out a box of clothes. Keep the stuff that you like, send the stuff back for free.

And you are matched with a stylist that takes the lessons from your previous package and applies them to the next one, so if you tell them "I don't wear.. plaid."

Sydnee: Wh—I would never say that, but someone who didn't—

Justin: Well, something like that. You could say something like that. And then they would be like, "Aw, dunk. Okay, we'll cut back on the plaid. So sorry."

Sydnee: And you can customize it to "I want more work clothes," or "I need more casual clothes," or "I wanna go out and look fancy." You can get jewelry and shoes and things too. Whatever you want!

Justin: It's awesome. Uh, it's a great service. The styling fee is just 20 bucks a month. You try everything they send you on, and you pay only for the stuff you love. You send the rest back, no problem at all.

Get started now at stitchfix.com/sawbones and you'll get an extra 25% off when you keep all items in your box. That's stitchfix.com/sawbones to get started today. [Stitchfix.com/sawbones](https://stitchfix.com/sawbones).

Folks, that is gonna do it for us for this sponsored portion of the show. We won't hold you up any more. We hope you enjoy yourself, and, uh... we'll see you next time! Uh, bye!

Sydnee: Back to the show!

Justin: Back to the show! That's a good—ooh, that—that sounded very professional, good job. Back to the show!

Sydnee: Uh, so—[holding back laughter] Dr. Ricketts, based on this story of the pubic hair tick, uh, began to investigate. Could ticks be the source? And he actually was the one to confirm, of course, that yes, this is being spread by ticks, and here's the organism, and he got to name it in 1909, so that was—it was pretty quick that he figured all that out.

Um, and this is kind of the story of Rocky Mountain spotted fever, is somebody would come in, figure something out, and then... I—I don't know. People don't like to stay in Montana for very long? I don't know what the deal is?

[audience laughs]

Sydnee: But then they leave, and somebody else comes up and takes over. So, like, he figured that out and was like... "I'm gone now. I'm leaving."

So he took off to go study typhus in Mexico right after that, and tragically he died of typhus in Mexico.

[audience laughs]

Sydnee: Unfortunately.

Justin: I mean, firsthand experience is the best teacher, I guess.

[audience laughs]

Sydnee: The—[holding back laughter] the next person to come take over to confirm all of this and collect—like, to try to see, like, "Well, how many ticks, and what other animals? Maybe is it in just ticks and humans, or are there other animals getting this too?"

The next guy was someone named Clarence Birdseye, and he was training in the Bitterroot Valley—this is where a lot of these cases were—to understand, like, the life cycle of these ticks and the Rickettsia and all that.

And so he collected just tons—what, 717 small animals and 4500 ticks, he bagged and tagged and figured all this out, and gave everybody this knowledge, and then he took off [holding back laughter] to go develop the concept of frozen foods, because his last name is Birdseye, and I'm not kidding... [through laughter] Birdseye Frozen Foods. [laughs]

Justin: Whoa, really?!

Sydnee: [through laughter] Were that guy, yes! So he had, like, this little brief segue into catching rodents and ticks, and then he went and made frozen food. And now you're—

Justin: It's the first time I'm ever glad I didn't make a dumb joke! I was, like, so close to being like "[mumbling mockingly] Oh, like Frozen Foods?" But it was that—

Sydnee: He did! He was the guy!

Justin: —it was that—it was that one!

Sydnee: The frozen vegetable guy [crosstalk]—

Justin: I guess Birdseye isn't *that* common of a name.

Sydnee: So he did his thing, and then he went off to make frozen vegetables, so that's nice. Uh—[laughs] so, more people came in, and a lot at this point—we needed a lot of entomologists, which I, like—doing—I am not an entomologist. I'm—I'm just a family doctor, but entomologists are so cool. They're always—are there any entomologists here?

[a few loud cheers]

Justin: No way. Hold on.

Sydnee: [simultaneously] Hi, yes!

Justin: Wait. *Really?*

[a single loud yell]

[audience laughs]

Justin: Wait, hold on. Shh. *Really?*

[pauses]

Justin: One more time.

Sydnee: [laughs]

Justin: Everybody be super quiet. Are there any entomologists here?

[scattered whoops]

Audience member: [distantly] Yes!

Justin: Okay. Can you turn the house lights on, please?

[audience laughs loudly and applauds]

Sydnee: Aw, Justin. [laughs]

[cheering continues]

Justin: You can turn up that sound a little bit. If you're an—wait. If you're an *entomologist*, please stand up.

[cheering continues and gets louder]

Sydnee: [unintelligible 21:54]

Justin: Where's our entomologist in the crowd? Please stand up. I see an entomologist right there.

Sydnee: Yayyy! There's another one—people are pointing over here, somewhere!

Justin: Any other ento—you better stand up and wave the hands, entomologists! This is your moment! It's your moment in the sun, entomologists!

[audience cheers]

Justin: Everybody, big round of applause for entomologists! Thank you for your service!

Sydnee: Thank you, entomologists!

Justin: See you over there! Thank you!

[cheering continues]

Justin: Thank you, entomologists. You know, there's—

Sydnee: You're just so cool.

Justin: —on the recorded version of this, you know there's an entomologist listening that almost came and they're like, "Aw, dang it."

[audience laughs]

Justin: "I knew I shoulda come!"

Sydnee: I don't know, but I feel like—like, in the scientific world, entomologists are kinda like... you're like the—like the bad boys, bad girls—

[audience laughs]

Sydnee: —you're like the... [holding back laughter] T-birds of the scientific world. That's—that's my feeling. Because—I mean, entomologists, like, lead the fight against malaria in the early days. Like, they were the ones. Like, there wasn't—it wasn't medical doctors.

It was entomologists figuring all this stuff out! And entomologists were the ones who said, "Uh, okay. Listen. The only way we're gonna control this—'cause right now we have no treatments, we don't know—we don't know what to do, doctors are going 'I dunno, here's some whiskey—'"

[audience laughs]

Sydnee: "—we've got to get rid of the ticks, so we're gonna start a tick eradication program—"

Justin: Yeahh!

Sydnee: "—and we're taking on the ticks!"

Justin: Mankind! Let's do it!

Sydnee: And—[laughs quietly] and they started with that, and then they said, "And the only way we're gonna do that is if we get the ticks off of all this cattle."

So, here's what I want—and I'm imagining, like, all of these cattle ranchers would probably be pretty intimidating. Like—like, weathered cattle ranchers, like, out on the frontier, and the entomologists are like, "Here's what I'm gonna have you do. You're gonna take your cows, [holding back laughter] and you're gonna bring 'em to this big vat of arsenic solution I have—"

[audience laughs]

Sydnee: "'cause I'm gonna get all the ticks off of 'em!"

And of course the cattle ranchers were like, "[deep voice] ... No."

And they were like, "Oh yeah, because I've got the whole—the whole state government's behind me. Bring your cows."

And that's what they *did!* They started this tick eradication program with cattle dip, to dip the cows, and get rid of all the ticks to stop the spread of Rocky Mountain spotted fever. And this—

Justin: That's how—and that's how French dip sandwiches were invented.

[audience laughs]

Justin: Who knew!

Sydnee: This set off this huge war where they were bringing their cows—and it took 'em a little bit to get, like, the right arsenic... solution—

[audience groans]

Sydnee: —it wasn't killing the cows. It wasn't killing the cows, but I don't think it was pleasant. Um, [holding back laughter] and it was not great for all the humans who were involved in the process either.

And so it took 'em—so, like, obviously the cattle ranchers were... pretty mad. And they weren't wanting to do this, so they started fighting back and protesting, and they actually, like... *blew up* one of the cattle dipping locations? Like, with dynamite? Like, went and blew it up. There was another one that they just took sledgehammers to and, like, destroyed it.

Justin: [laughs] Mankind!

[audience laughs]

Sydnee: [laughs]

Justin: We're on a roll!

Sydnee: But it really—like, in this story of Rocky Mountain spotted fever, you have this constant battle between the locals who are like, "Who are these weirdo scientists who are coming in, and they're trying to, like, dip our cows in arsenic, and they're killing all our ticks, and they don't know how to treat this stuff, and I'm just gonna stick with my Dover's Powders, 'cause I feel great on these."

And this really, like—this headbutting was the rest of the tale. So, meanwhile, doctors are like, "[holding back laughter] We gotta come up with something better. We have no treatment for this, and they're blowing up cattle dipping stands. So, we need something to do if people are gonna get this."

Um, and especially because people started to kind of get—like, it spread the idea that ticks were the bad guys, and so people started carrying carbolic acid, just a strong corrosive acid, with them. And if they would find a tick, they would remove the tick and then put carbolic acid on their skin, thinking, like—

Justin: Whoa!

Sydnee: —this will stop whatever the poison is from spreading.

Justin: And it did.

Sydnee: No.

[audience laughs]

Sydnee: No.

Justin: Alright.

Sydnee: No.

Justin: 50/50 folks, I had to take a shot.

[audience laughs]

Sydnee: So, two doctors started—two new guys came in. Roscoe Spencer and Ralph Parker decided, "Here's what we need: we need a vaccine. 'Cause vaccines are awesome, and—"

[audience cheers]

Sydnee: Yes. "—we have no treatments, let's—instead of dipping the cows and killing the ticks, why don't we just prevent it? Why don't we just vaccinate everybody?"

So, easiest solution? "[holding back laughter] Let's mash up a bunch of ticks—"

[audience laughs]

Sydnee: "—mix it with... carbolic acid again, with—still there. [holding back laughter] Mix it with that, and then inject it, and see what happens!"

[audience groans]

Sydnee: Which is exactly what they did! And they started off with, like, rodents, but then usually at that point they would wanna move on to, like, nonhuman primates, but they didn't have any. They only had, like, the human ones.

So, Dr. Roscoe Spencer, on May 19th, 1924, rolled up his sleeve—

Justin: Aw.

Sydnee: —and injected himself with mashed up ticks and carbolic acid! And it— and it worked!

[audience laughs]

Sydnee: This is the crazy thing! The vaccine was actually kind of effective. It prevented it in some cases, and even if you did get the infection, it wasn't nearly as bad in most cases, so... I mean, not the best vaccine in the world. Certainly not what we do today, but for the time, it actually worked pretty well.

Justin: If you had told me that, like, he had turned into The Tick—

[audience laughs]

Justin: —created by Ben Edlund, he had turned into that superhero, I would've been equally surprised.

[audience laughs]

Sydnee: So, now that they had a vaccine and a way of preventing it, this really—this was a big boon to, like, the scientists and the doctors who were working in the community. Like, "Okay. Well, maybe—maybe these guys actually know what they're doing."

And I think the fact that, like, Dr. Spencer actually tested it on himself, that—I mean, you know, that provides you some reassurance, right? Like, "They're outsiders, but, I mean, he injected the ticks in his own arm, so... [laughs quietly] so he can't be *all* bad."

And so there—initially, they were doing this research, by the way, in, like, tents. Like, all these research labs that they started were, like, tents, and then they graduated to, like, a cabin. Finally, like, a farm house, and then eventually, like, because of this vaccine, they got to move on to, like, an abandoned schoolhouse. [holding back laughter] So they had, like, an actual building. And they actually used to call it the schoolhouse lab, and they started making more vaccines and sending those out.

And, uh, the Board of Entomology, those entomologists again, finally said, "Look. Look at all this progress we're making. We've got this vaccine, and we're figuring out how to fight this thing," so they asked the state to provide them funds for, like, an actual lab, which they got. And in 1927, they got to build this big lab so that they could start... you know, actually... making more vaccine, making it maybe in, like, a better way than just mashing up ticks.

Justin: Hm!

Sydnee: Um, and finding a treatment, as well. If you already got it, what can we do?

So this was great. They had the money, they're gonna build the lab, everything's wonderful. Except... there were still a lot of local people who were terrified of this. Especially when you started reading reports that, in this effort, some researchers and laboratory workers had gotten sick and died of Rocky Mountain spotted fever

while they were trying to find these cures and prevention and treatment and all this.

So, locals started forming a coalition to say, "No. We don't want your lab. We don't want your bugs. We don't want any of this here. Take your weird ideas somewhere else." I don't know. [laughs quietly] "Take your—take your weird, big city ideas out of here. We don't like it!"

And so they had this huge—there was a lawsuit, and the locals fought, and the cattle ranchers fought, [through laughter] and the entomologists fought, and what eventually the judge decided from all this was, "Okay. This place probably is kind of dangerous," which he wasn't wrong. I mean, it did deserve, like, a biohazard level, the lab. And, I mean, it was originally just, like, a cabin. So that wasn't, like—

Justin: [laughs]

Sydnee: —wrong. But they said, you know, "We do need it, though, because this is a really bad fever and people are dying. So, you can build it... [holding back laughter] but you have to build a moat around it."

[audience laughs loudly]

Sydnee: "As well."

Justin: Mankind!

[audience laughs]

Justin: three for three!

Sydnee: So they did. They b—[laughs quietly] they built the lab, they built the moat. This was, by the way—

Justin: A science moat!

[audience laughs]

Sydnee: —[holding back laughter] this was based on the theory that ticks couldn't swim.

[audience laughs]

Justin: [applauds] Good, good, good, good, good.

Sydnee: So, this lab, by the way, became Rocky Mountain Labs, which still exists. Which is a big deal, it's part of—it eventually was absorbed into the National Institute of Health, and then I think now it's part of the National Institute of Allergy and Infectious Disease. During World War II it was, like, instrumental in pumping out all kinds of vaccines and everything, so it became this big, giant lab.

I don't know—my one question is, does it still have a moat? I don't know.

Justin: Probably. I would have to hope. That's inspirational. And so we fixed it!

Sydnee: Uh, yes. We actually—we did fix it, eventually. Not with a vaccine. There were multiple attempts through the years to make, like, a better vaccine that didn't involve mashing up ticks, and they came up with some different ones that—that were... good. That—some of 'em worked, some of 'em didn't. Um, some were more effective.

But then, the big breakthrough is antibiotics. We found that the tetracycline class of antibiotics, and specifically nowadays doxycycline, was very effective in treating Rocky Mountain spotted fever, so we just—if you get it, we give you that.

Justin: Hey, alright!

[audience cheers and applauds]

Justin: Um, yeah. So that is an impressive victory for science! We used to—this used to be a terrifying thing, and now it's—

Sydnee: Yeah. We dropped the mortality rate from, like I said, back in the day it would be, like, 30%, to around 0.3%, so—

[scattered cheers]

Sydnee: —it's still—it's still a serious infection. So, I mean—you guys don't have to worry. We're in Colorado. [through laughter] But—but, uh, we still treat it very seriously, but now we're way better at treating it.

Justin: In fact—and this is... extremely inspirational—uh, we actually have a very brave young boy who survived Rocky Mountain spotted fever—

Sydnee: This is true. [laughs quietly]

Justin: —this is true.

Sydnee: This is—we're not making this up.

Justin: A brave boy—brave boy, could you come out please? This—this b—

[audience cheers loudly]

Justin (in voiceover): At this point, my little brother Griffin McElroy joins us onstage. He did have Rocky Mountain spotted fever, and he does all sorts of flips and tricks to demonstrate his health.

Justin: [through laughter] He couldn't do that!

[cheering continues]

Justin: [through laughter] If you had seen him... just a few short years ago—thanks, brave boy! Thank you.

[cheering continues]

Justin: What a story. What an inspiration that young boy is.

[audience laughs]

Justin: He lost a little bit of his peripheral vision, but...

[audience laughs]

Justin: Wh—that's funny?!

Sydnee: [through laughter] This is all true!

Justin: Wowww. I'm gonna tell him you laughed at that.

Sydnee: When Justin first told me that, I thought, "That can't be right." I actually went to Clint for confirmation. Like, "Is this... is this r—"

"Mm-hmm. Yeah."

Justin: So now we're, like, 50/50 whether or not it's true.

Sydnee: [laughs]

[audience laughs]

Justin: [laughs] Uh—

Sydnee: Griffin says it's true.

Justin: Thank you so much for having us here in your beautiful city, Denver!

[audience cheers loudly and applauds]

Justin: Um... we, uh... we wrote a—if you've never listened to our show before and you're here—has anybody never listened before? It's okay to applaud—cool.

[audience cheers]

Justin: Uh, I hope you all subscribe to the show and listen to it. Um, it's basically like this, [through laughter] and there's hundreds of episodes.

Sydnee: [laughs quietly]

Justin: Uh, but we've also got a book! If you'd like to check out a book—

[audience cheers]

Sydnee: Thanks!

Justin: —it's *The Sawbones Book*, cleverly enough, and it's at bookstores everywhere, and on Amazon, and, uh, everywhere fine books are sold, so go buy yourself a copy and, uh—or three or four or five—and put food on our child's table!

Sydnee: [laughs]

[audience laughs]

Justin: Um, thank you so much for having us. Thanks to Paul. Thanks for—for coming, I guess?

Sydnee: Thank you, Paul.

[audience cheers]

Justin: And, uh, Syd? Do you have anybody you wanna thank? Thanks to Maximum Fun Network for, uh, having us as part of their extended podcasting family. Thanks to The Taxpayers for the use of their song "Medicines—"

[audience cheers]

Justin: —as the intro and outro of our program. Sydnee, anything else to add?

Sydnee: No. Thank you to all of our family backstage, who is taking care of our children. [laughs]

Justin: For watching our many children!

Sydnee: Yes.

Justin: Uh, but that is gonna do it for this time, folks. So, until next week, my name is Justin McElroy.

Sydnee: I'm Sydnee McElroy.

Justin: And, as always, don't drill a hole in your head!

[extended cheering]

[theme music plays]

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