

Sawbones 540: Renaissance Medicine

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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 song plays]

Justin: Hello, everybody, and welcome to *Sawbones*— Hello, everybody— Hear ye, hear ye... [sighs] Hear ye, hear ye, welcome to *Sawbones*, a marital tour of ye olde misguided medicine. I am thine cohost, Master Justin McElroy's... liege. Duke. [laughs] Of science.

Sydnee: And I'm Sydnee McElroy.

Justin: *Wow!*

Sydnee: [chuckles]

Justin: Wow. You absolutely left me to *dangle*.

Sydnee: I did. I did, I'm sorry.

Justin: You left me to absolutely *spin* in the wind.

Sydnee: Well, I'm not in my costume, so I just... I wasn't feeling it.

Justin: Wow. Wow.

Sydnee: Justin, we were at a ren faire over the weekend.

Justin: Not just any ren faire, Sydnee: the Harmony House Ren Faire, which was such a wonderful event. My brothers and my dad came down, and we

did pictures, and signings. We did a live *Sawbones* there, we did *Sawbones* signings and photos, and we raised a lot of money.

Sydnee: It was just a blast.

Justin: It was huge. It was *so* good.

Sydnee: And it was a wonderful fair, there was so much to do and see. There were horses and donkeys, and crafting and sword fighting...

Justin: Sydnee's mom, Mary, put in a Herculean effort, and basically [chuckles] soloed...

Sydnee: Mm-hmm.

Justin: ... this Renaissance fair for no pay, so she's a hero.

Sydnee: And they sold every giant turkey leg, I think, that they brought?

Justin: Yeah. You gotta come early. Next year, come early if you want a giant turkey leg, apparently. They're going fast.

Um, but we did do a live *Sawbones* there, and it was a *Sawbones* that was about Renaissance medicine!

Sydnee: Right.

Justin: Uh, and obviously, the conditions were not ideal for recording that episode, but we didn't want you to miss out on all that great stuff!

Sydnee: We were in, like, an outdoor amphitheater, at a ren faire...

Justin: Yeah.

Sydnee: ... and it was raining.

Justin: Yeah. And it was a big tent.

Sydnee: Just to clarify. Yeah.

Justin: It was a giant tent. So...

Sydnee: It was still great!

Justin: It was great. I mean, like...

Sydnee: I mean, it was still a wonderful thing. But it would've been hard to—

Justin: As an environment—

Sydnee: Yeah. Hard to record.

Justin: Yeah. As an environment to *watch* a live podcast, it was a hoot.

Sydnee: Excellent.

Justin: It was a hoot. I never— Is that our first outdoor... Have we done *Sawbones* outdoors before?

Sydnee: I don't think we've ever done *Sawbones*...

Justin: I don't think I've podcasted out of doors before.

Sydnee: I— Yeah!

Justin: It was pretty amazing.

Sydnee: That was... Well, anyway...

Justin: Well, that was probably the first-ever outdoor podcast, actually. So that's huge. [chuckles] [holding back laughter] Wow. We are making [laughs] history.

Sydnee: I— No. There is *no* way...

Justin: [laughing] Amazing! Amazing. *Wow*.

Sydnee: There is no way it's the first outdoor podcast.

Justin: I can't believe— I'm...

Sydnee: I guarantee...

Justin: I'm the first. Phew!

Sydnee: Justin, everybody has a podcast.

Justin: Sorry, honey...

Sydnee: [chuckles]

Justin: History has its eyes on me right now, and I'm... [laughs]

Sydnee: Mm-mm. No.

Justin: ... I'm staggered, a little bit.

Sydnee: No, everybody has a podcast. I'm sure there are outdoor podcasts.

Justin: The fact that you are quoting the title of my flop of a podcasting, [laughs] uh...

Sydnee: It was not a flop! You signed a copy of it this weekend.

Justin: Yes. That's true... That's true. I sold— I sold a copy of that book to *everyone* that would want me to personally sign my name in it, so I think I got my key demo locked down.

Sydnee: That's not true.

So Renaissance medicine, *I* think it's really fun to think about this specific era of medicine - and we'll cover some topics that we've sort of talked about before on the show.

But I wanted to put it all together in kind of, like, "What did this time in medical history look like?" Because prior to this - and we talk about, like, the medieval period a lot on this show. That, like... we didn't *forget* everything we knew, but we... thought about other things, [laughs] I guess, for some years.

Justin: Yeah.

Sydnee: We put other priorities in front of...

Justin: Yeah! We had to do...

Sydnee: ... logic, and science, and... reason.

Justin: Well, we found Excalibur, and we all got very excited about Excalibur, for many years. And then, eventually, we were like, "Listen. We love Excalibur. I think we lost it. We gotta get back to [laughs] science."

Sydnee: It's really interesting, because the dominant medical theory that persisted prior to the Renaissance is the humoral theory of medicine, the—meaning that we believe there are four humors in the body, and that all health and - well, wellness or illness, either way, is based on how well balanced those four humors are.

Justin: Yes. It's essential to keep those in place. They're phlegm, poo, pee, and snot.

Sydnee: No.

Justin: Ack. Black bile?

Sydnee: We've talked about them so many times...

Justin: Black bile...

Sydnee: Black bile.

Justin: *Yellow bile.*

Sydnee: Yellow bile. Phlegm.

Justin: Phlegm.

Sydnee: And?

Justin: Blood.

Sydnee: Good.

Justin: Yes!

Sydnee: Very good. I'm glad that you have [amused] mastered a theory of medicine that...

Justin: It is *wrong*...

Sydnee: ... has been debunked fully, and is... [laughs]

Justin: But that's the only way— Syd, that's the only way that you could spot a phony. [laughs] You gotta know 'em, right?

Sydnee: That's true.

Justin: So if somebody tries to pawn it off on you, it's like, "Hey, wait a minute! That's the humoral system of medicine. Nice try."

Sydnee: And they didn't come up with that in the Middle Ages, but it just— like, we didn't *grow* from it. We kind of— Like, I mean, that goes back to Hippocrates, right?

Justin: Yeah.

Sydnee: We just didn't change anything. We were like, "Yep. Four humors, and treatment is usually, like, either getting rid of a humor or putting more

of a humor in there, and then eating or drinking certain things to balance those out.”

And then there was a lot of, sort of, spiritual and religious understanding of disease, during those intervening years. You know, if they— “You’re sick, because you upset the gods. This is a punishment, in some way.” And the gods - or God, as we’re moving... You know, in a lot of these traditions, we’re thinking of more like a...

Justin: “Whoever’s up there, they’re mad at you.”

Sydnee: Yeah.

Justin: [snorts]

Sydnee: Yeah, like a monotheistic kind of “God is mad at you, and so you’re sick,” or “God is pleased with you, so you got better.”

Justin: Right.

Sydnee: Or “You’re possessed by demons, perhaps. And maybe the ways that we treat you have more to do with our spiritual beliefs, and praying for you, and that sort of thing, than any kind of medicine.”

And certainly, as we’ve moved into the Renaissance period, it’s not that all of this went away. We didn’t abandon all of those ideas [chuckles] all at once, and go, “Never mind, science is back.” But we started... [laughs]

Justin: [laughs] “Science is back!”

Sydnee: We started to lay the groundwork for a better, more reason-based understanding of these things during the Renaissance. You still see all of these other ideas persist, but great thinkers are beginning to question them.

And as is typical, as we’ve learned on *Sawbones*, just because a really smart person does a lot of really hard work to introduce a new idea and say, “Hey, I think this new idea - I might be right,” doesn’t mean that anyone listens to

them. In fact, most people won't listen to them. And many people will get angry, and throw things at them.

Justin: Mm.

Sydnee: And maybe, like, run them out of town.

Justin: Mm-hmm.

Sydnee: So— But the seeds are being planted.

So I wanted to talk about some of the thinkers of the Renaissance that started to change our idea of... medicine...

Justin: Yeah.

Sydnee: ... and science, and our understanding.

Justin: As already is, of everything, we're changing. Hence, the Renaissance.

Sydnee: Right.

Justin: It's a very exciting time. Just like they cover in the hit song, "Welcome to the Renaissance," from the hit musical *Something Rotten!* Now, on the way to the Renaissance festival, I tried to liven up the car with a few bars of "Welcome to the Renaissance," via...

Sydnee: Mm-hmm.

Justin: ... the music app, and it did not go over well in the car. There was a lot of tension there.

Sydnee: Well, okay, to be fair, we were running late.

Justin: Yeah.

Sydnee: I was very stressed. We were running late, and we go on tour...

Justin: Yeah.

Sydnee: ... and do shows all over the place. And we're not late for those shows.

Justin: Huh-uh.

Sydnee: And we might be traveling hundreds of miles.

Justin: Yeah.

Sydnee: And we're not late for those. We had to drive 10 minutes from our house to this ren faire...

Justin: Yep.

Sydnee: And we were running late.

Justin: Yes. Now, to be fair, to get to *those* shows, we don't have to get our kids out of their bedrooms. And that usually takes four hours.

Sydnee: And into costumes.

Justin: And you have to find them, too. They hide. [laughs] They hide like mice, [laughs] and then you have to track them down.

Sydnee: So anyway, let's talk about Fracastoro.

Justin: Ooh!

Sydnee: Okay.

Justin: That's a good name.

Sydnee: [chuckles] Science from the Renaissance Era... Uh, scientist, not science. He's not science. He is not the concept of science; he is a scientist.

1546, he proposed an idea - so as I said, up until now, our primary understanding of disease is based on the four humors. The idea that you *catch* an illness, that you get sick from someone else or from something else, that was not really understood or appreciated.

So he proposed a really radical idea, that maybe there is something that could pass an illness from me to you. And he called this - this thing, this particle, a "spore." Which, you know, isn't what we would necessarily call that today, but it's the beginning of the germ theory of disease...

Justin: Mmm!

Sydnee: ... being introduced in the 1500s.

Justin: It's like how you would explain it to a kid, right?

Sydnee: Yeah!

Justin: It's a very rudimentary— The basic structure is there, but we just haven't zoomed in enough.

Sydnee: Well, and he didn't know— When he said "spore," he didn't necessarily know if this was some sort of living organism that went from— So a bacteria or, you know, viruses, as we've discussed. There's somewhere... living, unliving, dead, undead - you know what I mean.

Or, if it was maybe some sort of chemical thing that got transmitted from me to you, a toxin or something like that. He really didn't know that, but he knew that— or he *believed* that it was possible that that's why people got sick, is that there are tiny things that we can't see, that we pass between each other and make us sick!

Justin: Forgive my ignorance, but what kind of, like, magnification are we working with at this time period? Is he working a lot in *theory*, or is he able to, like, use a magnifying glass and look at stuff?

Sydnee: So he is primarily working in theory, because this is before— We think of the Dutch scientist Leeuwenhoek as, really, the father of

microbiology, and the person who took microscopy to a point where we could look at small things. So this is more a theoretical understanding, than anything he's visualized.

But it's impressive, right? Like, because Leeuwenhoek didn't come around until...

Justin: More impressive, maybe...

Sydnee: ... the late 1600s, early 1700s. So, you know, we are easily 100 years, over 100 years before we're going to be able to see these things.

Justin: We're basically squinting, at this point. [laughs]

Sydnee: Yes.

Justin: Comparatively.

Sydnee: There's a lot of science that happens with us not being able to see something, but we do a series of experiments that prove that it's there.

Justin: Mm-hmm.

Sydnee: And I think that's really cool.

Justin: Yeah. There you go...

Sydnee: So there's my pitch for science. I'm gonna tell that— I think I have to talk to Charlie's class about STEM. I think I'm gonna say that, and see if that gets anybody excited.

Justin: [chuckles]

Sydnee: So anyway, um, he also proposed the idea of a fomite.

Justin: Hm!

Sydnee: Which, if you work in healthcare, you know that a fomite is anything that can carry disease. We talk about that a lot. It's why, for instance, the classic white coat - especially with, like... Your classic physician whitecoat has long sleeves.

It's not great, 'cause if those long physician sleeves are touching the patient when you're examining them - if they're rubbing against their clothes, or the bedsheet, or whatever - then they can get germs on them. And then you go touch another patient, and now you're wearing a fomite, something that can carry disease from place to place.

And he was the one who coined that term, and talked about that concept of a fomite: something that I could touch and it would make me sick, because it touched someone that was sick.

Justin: Hm! Okay.

Sydnee: Again, we can't see what the thing is, but we're beginning to understand that might be there.

Now, none of these ideas really caused a big stir in the science world. They were interesting, and certainly I'm sure there were people who also believe that way. But they didn't really *shift* public opinion. What Fracastoro did that I think he was most famous for, among the general public, was writing an epic poem about syphilis...

Justin: [laughing softly]

Sydnee: ... in 1530. [chuckles]

Justin: Yeah.

Sydnee: It was in three books. It was called *Syphilis*, or *The French Disease*. And it's excellent. It is about a shepherd boy... You'll never guess what his name is.

Justin: Well, this is cheating, but Syphilis.

Sydnee: Syphilis.

Justin: Yeah.

Sydnee: It is about a shepherd boy who is named Syphilis, who— His job is to tend the flocks of the king, and he accidentally insults the god of the Sun...

Justin: Hmm!

Sydnee: ... which you don't wanna do.

Justin: You don't wanna do it, especially if you're named Syphilis.

Sydnee: No. And he is punished for insulting the god of the Sun with... syphilis.

Justin: Syphilis.

Sydnee: They have developed syphilis.

Justin: I mean, it couldn't be more predictable.

Sydnee: Yeah.

Justin: It got him right there. I mean, it's... Absolutely, it's...

Sydnee: [chuckles]

Justin: It's Syphilis; they got him.

Sydnee: He gets syphilis. And so I think, again, this is a really great, little kind of all-in-one description of this era of medicine. So here we have someone who is using— who is gonna *describe* a disease... and, like, coins— Like, now we call it syphilis, it's named for the shepherd Syphilis, and we understand what the disease does.

He has developed the early beginnings of the germ theory of disease. But in the *poem*, he writes about it, it's a punishment for insulting the Sun god. [laughs]

Justin: Well, you gotta—

Sydnee: And also, he does it in the form of a poem. [laughs]

Justin: You gotta add a little drama, right? You gotta add a little bit of, uh, pizzazz to it. 'Cause otherwise, that's not gonna stick to the public consciousness. You can prattle on forever, but unless you got a little bit of a story...

Sydnee: That's true!

Justin: I mean, that's *Sawbones* in...

Sydnee: That's *Sawbones*.

Justin: Right? That's *Sawbones*. You gotta have a *little* bit of a story. [chuckles]

Sydnee: That's true. And I will say that doing it in the form of an epic poem led to syphilis always being called syphilis. That is why we call syphilis "syphilis."

Justin: Well, I guess you kinda locked it in.

Sydnee: So, there you go.

Justin: Well, you don't wanna mess with the meter at that point, right?

Sydnee: [chuckles]

Justin: The poem already rhymes. What, you gotta find a name that *rhymes* with syphilis? No way! "Hi, my name is Dyphilis..."

Sydnee: [laughs]

Justin: "... and I shouldn't have insulted the Sun god."

Sydnee: Another big thinker from the Renaissance period that changed the way that we started to look at the human body was Vesalius.

So as we've talked about on the show before, there was a long time where there was really no, like, ethics or morality around the idea of doing an anatomical dissection after someone has died.

Justin: Right.

Sydnee: Like, this was something that... that doctors and thinkers did, and we didn't *worry* so much about it, 'cause we understood we're trying to learn things. There wasn't some sort of, like, religious connotation to that.

And then we went through a long period where... "Absolutely not. That would be defiling a corpse, and it would be very disrespectful, and we wouldn't do that." And it took a long time.

Now, even in the Renaissance, everybody wasn't necessarily on board with it. It would be a very long time. We had doctor's riots, as we've talked about...

Justin: We're talking about, basically, a cultural change, right?

Sydnee: Yes.

Justin: This is not a legal shift; this is a *cultural* shift...

Sydnee: Yes.

Justin: ... in how we think about... at least in this culture, right? 'Cause it's always varied, around the planet.

Sydnee: "Is it okay to do an autopsy?"

Justin: Right.

Sydnee: Or, certainly, beyond an autopsy, to do something just purely to learn about the human body? To do anatomical dissection, is it... okay? Morally, socially... ethically?

During the Renaissance, it was more common, again, that people would do this, as a way of understanding anatomy. And Vesalius specifically wanted to look at everything Galen had written down about the human body to see, "Okay, well, let's check it out." [laughs] "Let's actually look, and see if this is accurate. You know, we can't just take your word for it."

And this, again: we're *questioning*. That's important, right? We're looking at the four humors, and saying, "Well, let's look inside, and see if they're in there." [chuckles] "Surely, we could find them all."

Justin: It's sort of like when... the first time I got the internet set up. When we're like, "Well, what website? Like, we should try these websites we've been hearing about, right?"

Sydnee: "We should look at all the websites."

Justin: "We should see if Nintendo.com *really* works."

Sydnee: [chuckles]

Justin: And that was the first website we went to, [through laughter] was Nintendo.com. Just a big picture of Mario's face that took 20 minutes to load.

Sydnee: [laughs] Uh, I just remember AOL, all the time. I was just so excited to be in chat rooms, and instant messaging.

Justin: Yeah.

Sydnee: That was—

Justin: We used to do instant messaging, back in the day.

Sydnee: So, anyway, he discovered over 300 mistakes that Galen had made. My favorite of all— And, I mean, again, this advanced our understanding of anatomy. My favorite mistake is that men, indeed, do not have one less set of ribs than women.

Justin: True.

Sydnee: It was very *controversial*...

Justin: True! A lot of people were not—

Sydnee: ... mistake to point out.

Justin: [laughs] Just 'cause he's contradicting the Bible?

Sydnee: Yeah.

Justin: I mean... [clicks tongue] Sorry, the Bible.

Sydnee: That's what I'm saying.

Justin: You guys could've checked that one. You *did* have skeletons.

Sydnee: [laughs softly]

Justin: Sorry. [chuckles] Sorry, you could've double checked that. You have skeletons.

Sydnee: Another doctor, William Harvey, was one of the first to start to describe the idea of a circulatory system. Prior to this, we didn't really understand how blood moved in the body. There was a concept, for a long time, that we were just kind of bags of blood.

Justin: Squeesh, sloshing around.

Sydnee: Sloshing around...

Justin: Just sloshing around, in there.

Sydnee: Which, like, I mean... We've talked about other animals with different sort of circulatory systems, and open circulatory systems like the horseshoe crab, so, like, that *does* happen.

Justin: It happens!

Sydnee: Like, it just kind of sloshes around. Ours doesn't work that way. And... [laughs]

Justin: [laughing]

Sydnee: And Harvey was the first one to talk about that, and start to describe... Like, build on the work that Avicenna had done, you know, centuries before. But build on that, to talk about the heart. It pumps blood *through* a circulatory system, through the human body; we're not bags of blood.

And then we also see Paracelsus, who we've done a whole episode on before.

Justin: Mm-hmm.

Sydnee: But Paracelsus was a really important figure during this time period. Because we see the concept of *alchemy*, where we're trying to turn stuff into gold...

Justin: Right.

Sydnee: ... or whatever precious thing...

Justin: Whatever.

Sydnee: ... we're trying to turn things into. Start to turn into *chemistry*, where we actually could make something in a lab. We could make a substance that would benefit us. And this doesn't sound like a revolutionary concept, because that's... you know, medicine.

Justin: Mm-hmm.

Sydnee: The vast majority of medicines. But at the time, the idea that you would put this new substance that you synthesize, that you've created...

Justin: Right.

Sydnee: ... *in* your body. Instead of some sort of herb, or natural remedy, or just, like, eating or drinking certain things. You know... This concept of a *chemical* that would make you better was brand new.

Justin: It sounds kind of like... You can have— Like, we had ingredients before. And this is like a recipe, right? So...

Sydnee: Mm-hmm!

Justin: We used to have carrots and hummus. And that would be what you would have. But then, later, we were like, "Wait a minute. If we mixed the carrots and hummus together, and put it in a bottle, sell it for \$100 dollars... then, it's medicine."

You get the idea. It's like a different— Like, a recipe... if a recipe that had hummus and carrots in it— So that wasn't a good example.

Sydnee: No, 'cause carrots and hummus are kind of fine, the way they are...

Justin: So if you have a plate with carrots and peas and corn on it, and you're like, "Oh, I like all these things." But then medicine is like succotash. It's like, "Wait a minute. Why don't you cut it all up, and mix it all up into a thing?" And now, it's a *thing*.

Sydnee: Yeah. Well, and also—

Justin: And succotash can cure your rickets, in this example. [laughs]

Sydnee: Well, the idea of putting a chemical in your body at all...

Justin: Right.

Sydnee: ... like, instead of, "Oh, you're sick. Eat more potatoes," or "Eat less potatoes," or something.

Justin: However many potatoes you're eating, is the wrong amount.

Sydnee: Yeah. Or, "You're sick. I've made this tincture out of things that I've found naturally in the earth." The idea that we *make* things to put in our bodies, not just pick things.

Justin: Right.

Sydnee: You know, this is where we start to see that.

So, Justin, those were some of the ideas that were permeating. What were some of the illnesses that we were trying to treat with these ideas?

Justin: Um... Well, I don't know.

Sydnee: Well, I'm gonna tell you, after we go to the Billing Department.

Justin: Okay! Well, then, let's go!

[theme song plays]

[ad break]

Justin: Alright, Sydnee, I have a cure in search of a disease. You were telling me what we were fixing with this stuff.

Sydnee: So the hard part, as they started to employ these new ideas, is that we had some illnesses that were pretty rampant that, I mean, even to this day, can be very challenging: for instance, smallpox. We don't have smallpox around anymore, thank goodness. But if we did, that would be bad.
[chuckles]

Justin: Yeah.

Sydnee: Smallpox was very deadly. And so, even as we are starting to understand, like, anatomy and the circulatory system, that doesn't really help us... fight smallpox.

Leprosy, the plague... we didn't have antibiotics, so these were big deals, right?

Justin: These were huge deals! Yeah, we don't really have a lot of options [amused] to deal with stuff.

Sydnee: The plague, in particular. So during - if you were at our live show about Renaissance medicine, you would've seen, I was dressed as a plague doctor...

Justin: Mm-hmm.

Sydnee: I should go ahead— And I could lie about this, 'cause...

Justin: You should lie about it!

Sydnee: No, I'm... not going to.

Justin: Why not lie?

Sydnee: I don't do that with our listeners. I could lie to you, and say I was fully costumed as a plague doctor, but the truth is - and this is part of why we were late - I have lost my plague doctor mask. I have the rest of the costume—

'Cause I had a moment where I thought, "Do I not own this? I know I own this! I know I've worn it! And I have the rest of the costume in a pile, in my office. Where is the *mask*?" I don't know.

Justin: No.

Sydnee: So I lost it.

Justin: *But* you had a good backup plan. So I thought you looked really cool, still, honestly.

Sydnee: Well, thank you.

Justin: Yeah.

Sydnee: And I will explain what my backup plan was.

So the plague was one of the biggest problems throughout a lot of history, but certainly during the Renaissance period. And there were a lot of treatments that still relied on the humors, as the theory - you know, how we were treating it.

But a new idea that arose during the Renaissance was called miasma theory.

Justin: Yeah.

Sydnee: Which is where...

Justin: It's in the air.

Sydnee: ... it's in the air.

Justin: It's just something in the air.

Sydnee: Yeah. It's like a bad— And it might be represented by a bad smell or something - like, it could be associated with that. Or it's just it's in the air, and it's around you.

And so plague doctors in particular would be outfitted in a way to protect them from the miasma that is the plague.

Justin: Mm.

Sydnee: So the plague mask, as we've— And I think we've talked about some of this on the show before, but just to reiterate...

Justin: Yeah.

Sydnee: The plague mask, you would have, usually, a bundle of herbs or incense, something that smelled nice, called a pomander...

Justin: Mm!

Sydnee: ... that would sit inside that big, long beak part. And that would help you not breathe in the miasma. Your long wax coat would protect you from any sort of, like, fluids or substances. And then there were red gems, usually, or some sort of red... color...

Justin: Mm-hmm.

Sydnee: ... over the eyes, in the mask. Because red could ward off... illness. [chuckles]

Justin: Now, okay. The red, I don't know. I don't know what to tell ya.

Sydnee: Yeah.

Justin: I will say this: I can understand, if you're an old-timey person that doesn't have all of my incredible knowledge of science that I have gotten from *Google*...

Sydnee: Mm-hmm.

Justin: ... that you might think, "Well, the stinky air around here is making people sick." And the only way to know if it's bad air that's gonna make you sick is, like, a filter, right? They're filtering with good smells, with the [amused] assumption that the smell is a good indicator...

Sydnee: Yeah.

Justin: Like, somehow the smell is mixed up in it, right? [chuckles]

Sydnee: Which isn't— I mean, some of these things are - again, you're right. They're true.

Justin: Hey, we're getting there, right? We're getting in the neighborhood!

Sydnee: Well, it's like—

Justin: It's like a day in '95, for old-timey cats!

Sydnee: [chuckles] It's like we've talked about, like, why is it important that we experience— This gets into the movie *Inside Out*. Why is it important that we experience disgust?

Justin: Because it protects us.

Sydnee: It protects us.

Justin: Right.

Sydnee: And so if something grosses you out, if a bad smell grosses you out... On some level, it may be your body's trying to get you to move away from something that could harm you.

Justin: Let's also just acknowledge the fact that these are human beings not biologically and evolutionarily so far removed from us.

If they're like, "Listen. I don't know if it's making me healthy or not, but I'm loving not smelling all of the sewage in the street. I'm wild about it. Let's just roll with it. Let's leave it up in the beak, and just— 'cause I love it." It's... yeah.

Sydnee: Yeah!

Justin: I wanna make this an all-the-time thing.

Sydnee: [chuckles] So, because I did not have the plague doctor mask, I wore red sunglasses...

Justin: Mm-hmm.

Sydnee: ... to this event.

Justin: Yeah, the glasses— the red glasses, I can't give them any old-timey points on, unfortunately. [chuckles]

Sydnee: No. But I felt like it was a good combo, 'cause we're in the Renaissance, so we're *starting* to move away from these ideas, but we're still—

And I think that this is, like, a good lesson about humanity. We were starting to understand that a spiritual basis - like, the idea that disease was punishment, the idea that these red glasses ward off evil so I'll wear them to protect me from the plague - we're starting to know that that's not true. But when faced with something really scary...

Justin: Mmm.

Sydnee: ... we revert back to those things.

Justin: Yeah.

Sydnee: Because we're desperate for anything.

Justin: We're [crosstalk], yeah.

Sydnee: And I think we have seen echoes of that in real-world situations today, all through the pandemic. You know, we have seen people revert back to things that, perhaps, we know logically aren't very helpful, because we are so afraid.

Justin: Yeah.

Sydnee: Right? Fear makes us do that kind of thing. And feeling helpless.

So, anyway, the thing about plague doctors, too, is that they generally would carry a big stick to examine you with.

Justin: A poke— a medical stick.

Sydnee: A medical stick. *I* like to call it an examin'in' stick.

Justin: [laughs heartily]

Sydnee: And then we'll just examine you with this stick, and then we don't have to worry about touching you.

Which, *again*... Like, we know something's going on with being around people with the plague, and you get the plague... 'cause the fleas are biting you. But anyway...

Justin: But.

Sydnee: Anyway, we didn't understand all that, yet. And because, obviously, this isn't the best way to examine people, and we really didn't understand the plague very well, and we didn't understand disease very well, we were still sort of throwing out a lot of the same ideas of, like, bloodletting... puking, peeing, pooping, things to make you purge, that [chuckles] kind of thing.

Um, there was a whole field of pestilence medicine that arose that was very akin to, I think, some of the, um... It almost sounds like some of the wellness stuff that you hear today.

Justin: Mm-hmm.

Sydnee: Like, "I have become a specialist in alkalinity."

Justin: [laughs]

Sydnee: And... [chuckles] "I'm gonna tell you how to alkalinize yourself. And I have a variety of products you can purchase, to help you out."

Justin: "I'm a hydration specialist."

Sydnee: Yeah...

Justin: [laughs]

Sydnee: You know... [chuckles] I mean, I think you see this, again, echoed today in, like... In the field of pestilence medicine, you would get basically a bunch of, sort of, folk or herbal or just straight-up fake stuff we put together...

Justin: Right.

Sydnee: ... to try to make money off of people. Like, eggshells crushed up into a powder with some marigolds, and then you put them in some ale and sugar, and drink that.

Justin: [singing] "And these are a few of my favorite things..."

Sydnee: [amused] I mean, really, it feels that way!

Justin: [laughs] It's fine!

Sydnee: It feels that way. And so there was still all of that around the plague, even as we were also creating pesthouses, which were quarantine facilities. So we did— Again, we were starting to do things that probably would impact the spread of plague...

Justin: Yeah...

Sydnee: ... at the same time we were doing a lot of stuff that didn't. During the Renaissance, we also see the English Hippocrates, Thomas Sydenham.

Justin: Mm-hmm.

Sydnee: Introduced the idea of diagnosis. [chuckles]

Justin: [laughs]

Sydnee: You know, maybe we would make people better, if we diagnosed them before we tried to treat them.

Justin: It's worth a shot.

Sydnee: Instead of just saying, like, "You are sick."

Justin: "Here's an..."

Sydnee: "There are 10 things for 'sick.' Try one."

Justin: "Did you try tea? We also have oranges, and honey!"

Sydnee: "Wine?"

Justin: "Mm."

Sydnee: "Wine's always there."

Justin: "What about eggs?"

Sydnee: [laughs softly] "And if nothing else, we'll bleed you."

Justin: "Oh, wait! Did you— Wait, come back! What about owl vomit?! Wait!"

Sydnee: [laughs]

Justin: "What about owl vomit?!"

Sydnee: So Sydenham said, "I think we should start trying to tailor a treatment to... what's wrong with you."

Justin: Right.

Sydnee: And you see that using that sort of [chuckles] concept, we start doing things like treating pain. "Well, you're hurting. Well, we know that we have laudanum, we have opium. That helps with pain. Why don't we treat your pain?"

Justin: Right.

Sydnee: He proposed that malaria could be treated with cinchona bark.

Justin: Correct! Isn't it the root of quinine?

Sydnee: Yep! Yup, it has quinine on it. So he noticed these cyclical fevers responded really well to this specific bark, so he would diagnose the malaria *before* prescribing the bark. Which, again, doesn't sound— Like, you say that, and you're like, "Well, yeah. That's what doctors do." Well, that *wasn't* what doctors did, before! You know?

Justin: Yeah.

Sydnee: I mean, that's the thing. This idea of, "What is medicine? What is healing? What is the profession of physician? What do you do?" was really starting to change in a way that, I mean, echoes what we do now.

Justin: Well, when we're talking about...

Sydnee: But this is the beginning of that.

Justin: You're really talking about - it seems like a lot of this is interesting, because what you're talking about is cultural shifts. Which is not as much of a... *Sawbones* thing, I think, because eras are rarely the purview. You know, we're normally talking about a large, chronological span of time.

But it seems like what we're really looking at is a *reordering* of, like, priorities. A reordering of the culture that, like, *enabled* the progress.

Sydnee: Mm-hmm.

Justin: Rather than, like, individual discoveries from the time period.

Sydnee: Right. Well, that's...

Justin: It's like reordering how we think about it.

Sydnee: Exactly. That's— You have to shift everybody's thinking first, and *then* you can start building on that, with actual practices and stuff that people accept. And obviously, during this time period, we also have the development of, like, the printing press. And so instead of every book having to be hand-copied, you have ways to distribute information in a brand-new way. You know? Like, more people can access it, too.

But it takes a long time. Even now, in the age of the internet, it takes a *long* [chuckles] time to change a misinformed position or idea. If it has been held for, you know, centuries prior to that.

Obviously, with all of this information, even with Sydenham making these advancements, we still really didn't have great cures for things, just because we hadn't made a lot of them yet. Even as we were starting to figure out, like, "That herbal thing seems to work well for that," it would be decades and decades before we would start synthesizing the actual compound, right?

Justin: Mm-hmm.

Sydnee: Like, there's a reason we don't give people tree bark for malaria. Because now, we can make the thing, the active compound that makes you better, we can make *that* in a lab.

Justin: Right.

Sydnee: And it's *just* the thing you need, and not all the bark.

Justin: It's like they'll sell you Cinnamon Toast Crunch dust now, in a jar, and you just buy the dust. So that you don't actually need the cereal, 'cause you *have* the dust concentrate.

Sydnee: That's actually a decent analogy, yes.

Justin: Oh, thanks, wow. The astonishment in your voice [laughs] is a little hurtful, but... [laughing]

Sydnee: Well, no, it's really good! Because, I mean, people will say, "Why do we need digoxin? We've got foxglove." And it's like, yes, that chemical in

digoxin was originally synthesized from the plant foxglove. But now we just make you digoxin, like the thing you need, and you don't have to eat a plant.

Justin: Yeah, it's great.

Sydnee: And that's better. It's *better*, because then you don't— The leaves probably taste gross, whatever. Anyway.

But we still didn't have great ways to cure things, so we were still doing some things that didn't make sense. For scrofula, also known as the king's evil, the reason it was called the king's evil - and we've talked about this extensively on the show - it's because you would cure it by being touched by a king. [laughs]

Justin: Oh, yeah.

Sydnee: It was, like, a tuberculosis-like illness, and the way that you got it better is, you had to have someone in the monarchy touch you, or touch something that you touched.

Transference was still a popular theory of disease, meaning that one treatment for the plague, for instance, would be to take a live chicken and strap it to one of your boobies...

Justin: [snorts]

Sydnee: ... your big and large lymph nodes... [chuckles] so that you could give the chicken the plague, and then you'd be better.

Justin: Poor chicken.

Sydnee: I know, poor chicken. There was also the idea of color theory, so you treat things with things that are the same color. This isn't *too* far from the doctrine of signatures, really.

Justin: Yeah.

Sydnee: Right? The idea that like cures like. This would've been similar, so you could cure your jaundice with turmeric, or your smallpox with lime. Similar colors.

But I think the big thing to take away is that, as we're starting to understand diagnosis, the beginnings of germ theory, the idea of what is inside the human body, anatomy - you know, *all* of these ideas are really flourishing. We're understanding how to make chemicals that might impact the way we feel.

As all of this changes, it leads us to, sort of, at the end of the Renaissance period, where I think we have the greatest... contribution.

Justin: Mm-hmm.

Sydnee: After *all* this...

Justin: After all that. Even with all of that!

Sydnee: *All* that, which is truly great. The greatest contribution comes at the very end of the Renaissance, when Edward Jenner, an English doctor and scientist, said, "You know, I've noticed that milkmaids who get cowpox don't get smallpox."

Justin: Whoa!

Sydnee: "And cowpox doesn't kill you, but smallpox does."

Justin: So...

Sydnee: "Maybe, if we gave people cowpox, they won't get and die of smallpox." And, obviously, that's not... That wasn't the final solution— That wasn't what we arrived at, at the end.

Justin: Right.

Sydnee: But that was the beginning of the vaccine! So he made the first vaccine against smallpox. And that really, like, if you think about kind of the

apex of the Renaissance moving into the next period of scientific understanding and medicine, what greater thing could you point to, than vaccines? Than the *beginning* of, "Hey, instead of waiting 'til people get sick, and scrambling to try to save them... Let's stop them from ever getting sick, in the first place."

Justin: Thank you.

Sydnee: That's beautiful.

Justin: That's beautiful. Thanks again, vaccines.

Sydnee: Yeah. Thank you, vaccines.

Justin: Hey, anything you wanna mention about vaccines, while we're here, Syd?

Sydnee: I did wanna mention something. I feel like that, as RFK Jr. continues to just, like, throw a lot of misinformation and uninformed scientific... I don't even wanna say "scientific opinions." They're just uninformed opinions about science... at the general public. It can be helpful for us to sort of debunk some of them.

First of all, I will say that a lot of the statistics that he's throwing around about diabetes, for instance, are completely wrong. Like, none of these numbers make any— Like, half of people in China don't have diabetes. He said that 50% of people in China have diabetes; that's not true. I think he probably knew that, but... that's not true.

Anyway, one thing in particular that he said, is that he wants to reintroduce placebo trials of vaccines. And I know, if you listen to our show, or you are somebody who is science minded, you may have a moment where you think, like, "Well, a placebo trial is not a... problem." But it is. It's a *giant* problem that he's throwing out there, and I just wanted to highlight why.

Let's talk about the measles vaccine, 'cause that's the one he seems to have the most difficulty coping with. Um...

Justin: Not understanding.

Sydnee: The measles vaccine prevents measles, okay? We have a *ton* of data that the measles vaccine prevents measles. If we were going to try to use something else to prevent measles, we would not test that against a placebo. Because we have an excellent thing that prevents measles, already: it's the measles vaccine. That's how we do research, when it comes to—

Especially, like, deadly, life-threatening, or even just diseases where people are already sick. We don't just say, "Hey, we have a treatment for what you've got. And we could give it to you, 'cause we know it works pretty well. But we have something over here in the lab that may work better, so we're gonna test placebo versus this thing in the lab." We're not gonna do that. We're gonna see if the new thing works better than the old thing.

Justin: Right. 'Cause we have a— We're not starting from zero.

Sydnee: We're not starting from zero, and we have something that already works. And to start from zero... Well, one, it wouldn't be very scientifically helpful. Because we really want to compare it to what we already have, right? We don't wanna compare it to zero; we wanna compare it to what already exists. So it doesn't make sense.

But two, it is *wildly* unethical. It is... I mean, it will absolutely endanger the lives of children, to start from *placebo* with vaccines. So what he is proposing is putting our children's lives in *danger* with absolutely unethical, irresponsible pseudoscientific studies.

And that's just to really highlight. We would not do placebo testing, because we *have* something that works! And human lives matter.

Justin: Yeah.

Sydnee: And you are not experimental subjects; you are people.

Justin: So tell everybody you know about that, okay?

Sydnee: Yeah.

Justin: Thanks.

That's gonna do it for this week on *Sawbones*. Thanks again for being here, for hanging out with us. That's gonna— Oh, thanks to The Taxpayers for the use of their song, "Medicines," as the intro and outro of our program.

We are gonna have, I think, some extra shirts for, like, the...

Sydnee: From the Renaissance Faire.

Justin: From the Renaissance Faire.

Sydnee: Mm-hmm, yeah.

Justin: If you would like to get one of those, we'll let you know when you can. 'Cause we don't— I don't know, yet. But they will be— I *believe* we're gonna put 'em in the merch store.

Sydnee: Yeah.

Justin: So that'll be at McElroyMerch.com. Go check, right now, to see if they're there. Because even if they're not, you can get some *Sawbones* stuff.

Sydnee: Yeah! And we'll put up pictures. They're really cute: they're red and purple, and they've got all the ren faire stuff on 'em.

Justin: Right. You're gonna love them.

Sydnee: Yeah!

Justin: And buying them will support Harmony House, so thanks.

And thanks, again, if you came out. It was so nice, that was such a good turnout. And I hope that if you didn't make it this year, and it happens again next year, that you'll come out next year.

That's gonna do it for us, for this week on *Sawbones*. My name is Justin McElroy.

Sydnee: I'm Sydnee McElroy.

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

[theme song plays]

[acoustic sting]

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