

Sawbones 323: COVID-19 Q&A

Published May 17th, 2020

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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 you 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]

Justin: Hello, and welcome to *Sawbones*: a marital tour of misguided medicine. I'm your cohost, Justin McElroy.

Sydnee: And I'm Sydnee McElroy.

Justin: And I'm Justin McElroy.

Sydnee: Still. Hey, Justin?

Justin: Yes?

Sydnee: I know that you meditate sometimes. Do you still do that?

Justin: Um, I have a hilarious habit of, uh, not meditating when things are going pretty well, and then all of a sudden my anxiety catches up with me in a terrible, uh, torrential downpour and I think, "Why is this happening? How could this happen? I'm just only not doing any of things I'm supposed to do to control my anxiety! How am I not controlling my anxiety?"

So, yeah. Things have been okay lately, so I haven't been meditating. I have *not* learned from the past. Um... but yeah. I'm—I'll meditate from time to time.

Sydnee: Well, you kinda killed my intro there. You should be. [laughs quietly]

Justin: Oh. Okay.

Sydnee: But you meditate to—it helps, like, give your brain... a break.

Justin: Yes, right. It's training your brain to give it... rest.

Sydnee: It's important for us to take care of our brains. Take care of our bodies, take care of our brains, take care of ourselves. Uh, the stuff of ourselves. Ooh, that's very relevant to this episode.

Justin: Oooh.

Sydnee: Uh, but this—this particular show this week, I thought kind of a—an existential moment, a philosophical moment might be in order.

Justin: Okay.

Sydnee: Um, I would encourage everybody to keep doing the hard work their doing in all arenas right now. Um, keep protesting and calling your representatives and donating and reading and learning and, uh, also wearing your masks [laughs] and washing your hands and staying at home as much as possible.

All those things, all that hard work that we're all doing, it's important that while we are doing that hard work, we take care of ourselves and, um, nurture our—our brains and our bodies and our souls.

And I thought to take a moment this week to use the show to provide something to... meditate upon, something to think about. Kind of a spiritual...

Justin: Spiritual oa—oasis.

Sydnee: Yeah. Just—we'll—we will get back to more of the same relevant current content that we have, uh—we've been doing. But—but I thought... *my* brain needed something like this.

Uh, I read this story and it made me ponder things that I have not given myself space to think about lately and so I thought perhaps our audience may—

Justin: Okay.

Sydnee: —may need that moment.

Justin: Well, what are we—what are we talking about?

Sydnee: Uh, if you're exhausted and you think that the story of a man who tried to weigh the human soul may help bring you a little peace right now, then this is what I'd like to share.

Justin: That's—uh, that's a somewhat troubling start.

Sydnee: [laughs]

Justin: I was hoping for something more sort of pizza-related, or... something. But—

Sydnee: You can eat pizza while you listen to this episode. I don't think it's... [pauses] gross. Man, I really always have to think about that before I make that statement.

Justin: Yeah, I heard you, like, mid—mid... why aren't one of the children actually, like, hammering directly above us, do you think?

Sydnee: Because we're letting my mother watch them right now.

Justin: Fair enough, okay.

Sydnee: Uh, thank you to both Theodora and Jennifer who have suggested this topic... years ago, I believe. Uh, when I checked to see if anybody had ever brought this up before, I think years ago. But it's a good one, if you haven't heard of Dr. Duncan MacDougall, and the time he—

Justin: I like that name. It's a good start.

Sydnee: It is a good name. And the time he tried to weigh the human soul. I should note—I thought this was important. You may already be aware of this, or have, you know, deduced it through... Sherlockian reasoning. But we do not learn about the soul, really, in medical school. That is not, like, a class we take.

Justin: Right.

Sydnee: Um, we stick with the—the scientific and, uh, the—specifically the medical. [laughs quietly] And while there are certainly many times where we talk about, like, the humanistic elements of medicine and the way that spirituality and various religious beliefs can play into decision making in some aspects of

medicine, we never learn about the soul as any sort of, you know, scientific concept.

You probably already knew that.

Justin: Yeah, that's what I would've guessed.

Sydnee: It's just—those matters are better left to people who study the spiritual, the metaphysical. So the reason I say this is that I find it particularly fascinating that Dr. Duncan MacDougall was a physician, who deciding to take up this task.

Justin: He just thought everything else had been sort of figured out.

Sydnee: I—

Justin: 1901, we got it pretty much... figured out. Maybe he just, uh, wanted to branch out.

Sydnee: I don't know—

Justin: Because all of medicine had been fixed.

Sydnee: —I don't know—I—I regret that we do not know more. I don't have a lot of background to give you about this individual. We don't know a lot about what he was doing before he did this thing that is the thing he will be known for, I think, for all of time.

Uh, but he—he was regarded well in his community, we know that. Like, he seemed like he was respected as a physician there in, uh, Haverhill, Massachusetts, in 1901. Um, whatever he had done previously, it had not been [holding back laughter] strange or bizarre enough to draw any sort of *negative* attention, anyway.

Um, but he also was not—there are no, uh, stories of great acts prior to this either, so—

Justin: He was fine.

Sydnee: I guess a regular guy.

Justin: Just a regular guy.

Sydnee: A regular doctor guy. I—you have to imagine he had some sort of spiritual, religious... inclination? Because he believed there was a soul to weigh. So he must've—

Justin: He wasn't a skeptic.

Sydnee: You would think. I mean, there was no evidence that he was trying to disprove the existence of the soul with these experiments. Certainly he was a scientist and, I think, open to that idea, as we'll get into. But it seems that he was really in pursuit of... capturing that that is the soul, in some scientific measurement. And the weight is what he chose.

So, uh, he believed that the soul was some sort of matter. He allowed for the possibility that it wasn't, but he said, "Let's go ahead and—and kind of assume that it is."

Justin: Okay.

Sydnee: Then we should be able to weigh it.

Justin: If it is matter, you would think, yes.

Sydnee: It has weight. However, there is a problem with weighing, Justin, your soul, as you sit there before me today.

Justin: Uh... well, gosh. I can think of all number of—one, it's trapped in my incredible body.

Sydnee: That's the main one. That's really—

Justin: It's mainly that.

Sydnee: Yeah. That's the number one problem.

Justin: How do you separate it? It's not like where you can weigh your cat by weighing yourself by weighing yourself and then picking up your cat.

Sydnee: Exactly. He had no way for us to, like, *temporarily*... set aside our soul.

Justin: But he had a way of *permanently* doing it?

Sydnee: Well, he didn't have a way. I do not want to put malicious intent upon this poor gentlemen.

Justin: He knew about, he heard tell of.

Sydnee: That—yes, mortality.

Justin: Yeah.

Sydnee: That eventually the soul should become separate from the body, in—in this philosophy. And so this would be the moment to weigh the soul. He actually wrote about this. To use his own—his own words, his thinking on it:

"We are therefore driven back upon the assumption that the soul substance, so necessary to the conception of continuing personal identity, after the death of this material body must still be a form of gravitant matter; or perhaps a middle form of substance, neither gravitant matter or ether, not capable of being weighed and yet not identical with ether.

Since, however, the substance considered in our hypothesis is linked organically with the body until death takes place, it appears to me more reasonable to think that it must be some form of gravitant matter, and therefore capable of being detected at death by weighing a human being in the act of death."

So there you go.

Justin: Okay.

Sydnee: So—

Justin: [holding back laughter] Easy enough!

Sydnee: He's gotta find some people who are...

Justin: Sa—very sick.

Sydnee: [laughs quietly] Unfortunately.

Justin: Or have a hit put out on them. Possibly.

[pauses]

Sydnee: And—

Justin: Or are standing underneath, like—

Sydnee: No.

Justin: —a particularly lightning attractant tree, perhaps?

Sydnee: These are—is this—

Justin: People walking under construction sites in cartoons?

Sydnee: Is that what you—is this immediately where you think—okay. Wait wait wait. Let's back this up.

Justin: Uh-huh?

Sydnee: So your first thought—

Justin: Yes.

Sydnee: —if I need to find—if I need to find someone that I can weigh immediately before and after the moment of death is to find... a hitman.

Justin: No.

Sydnee: Or woman. Or person.

Justin: Let the record show—

Sydnee: [simultaneously] A hitperson.

Justin: —I said sick person first. So no, that was my *second* thought was hitman.

Sydnee: Okay. Your second thought was find—

Justin: Hitman is nice because you can time it exactly right. I know exactly when they're gonna be stepping on this scale, and also it turned out they've been doing crimes. [holding back laughter] I found out about it. They have been doing terrible crimes, and they deserve this, and we can all feel good for the retributive justice.

Sydnee: Ohh, so you're assuming that the hit is on someone who is bad.

Justin: Nah, I don't have to assume. I'm the one putting out the hit.

Sydnee: Mm-hmm.

Justin: Me and... Duncan are puttin' out the hit—

Sydnee: You're putting out the hit?!

Justin: Yeah, Syd! But it's on a bad person. That—[holding back laughter] that lives near a—[snorts] big scale!

Sydnee: [laughs quietly]

Justin: [through laughter] Those were the two factors that we had is they have to be a terrible, wretched person who deserves retributive justice, and they also have to live next to a very large scale that they occasionally walk across.

Sydnee: There are some really complicated ethical ideas that you're putting forth.

Justin: Yeah. I—the ethics of putting a scale that close to somebody get into some weird poly po—body politics. I'm not sure that, you know, somebody *should* be living that close to a scale—

Sydnee: Uh—

Justin: —and walking across it daily.

Sydnee: —uh-huh. I also would please ask... hitperson. Don't limit me.

Justin: You're right, Sydnee. Um—

Sydnee: Why—why only men?

Justin: That's—that's true. I guess it's—that's fair. All—all people... [holding back laughter] can be murderers for hire.

Sydnee: [laughs] Thank you, Justin. Uh—

Justin: What a—what a great day—what a—what—great progress has been made here today.

Sydnee: [laughs] Um, so no, he did not find a hitperson to follow around. Uh, he did not look for—

Justin: Oh, that's even better, actually. That's good. I was thinking set, like, a scale trap.

Sydnee: N—no. He—he did not—he did not say, like, "Hi, are—are you a hitperson? Can I follow you around and... just do some science measures before and after you do your work?"

Um, he—he did not find any anvils... dangling precariously over the heads of any cartoon characters. Uh, he instead did look for sick people. [pauses] He was also a doctor, so you gotta think that's probably where his mind went.

Justin: Yeah. I mean, it's a little bit predictable but, um, you can see how, uh—how his mind would go there.

Sydnee: So, his basic idea was, "If I can find somebody who is near death, I will weigh them right before." *Right* before. I mean, that's the only way this works. You have to weigh them right before and *immediately* after the moment of death. I mean, almost concurrent with the moment of death, right? Because, as we'll get into, there are lots of other factors that could throw off the weight a very small amount, and he figured he was looking for a very small amount of weight.

Justin: So not—probably not heavy. We would've noticed that.

Sydnee: Yes. [laughs quietly] So, uh, this is somewhat—this is a simple design, but you can see that... all of Justin's wild ideas aside, it's still ethically pretty fraught.

Because you have to find someone who is close to death, and ask them—or their loved ones, whoever is making decisions for them—is it cool with you to spend your last moments on this giant scale I've built while me and perhaps a team of scientists very closely observe your weight?

Justin: Is that how you imagined—

Sydnee: Right.

Justin: —this would wrap up?

Sydnee: Uh, and also you have to hold very still, because I've gotta keep these scales balanced. It's only 1901. [through laughter] Scales are only so good right now. We don't have digital ones.

Justin: Right.

Sydnee: Uh, so he was able to eventually find a small number of participants, a very small number of participants from local nursing homes. Uh, he—he looked first for tuberculosis diagnoses. Um, one, because at the time tuberculosis had no cure, so it was a—a fatal disease. It was a—not quickly fatal, but eventually fatal disease.

Uh, and it tended to be a wasting disease, so you would get very weak and, uh, thin, and unable to move much. So he thought these would be people who would very naturally be... still and peaceful and calm as they passed, and so it would be easier to—to weigh them. You know.

So, he looked for tuberculosis. Uh, he found six people who... I guess were willing to be included in the study. Uh, and who he thought met the appropriate criteria. Four of them did have tuberculosis. Two of them didn't. One was in a diabetic coma, and then the other one we don't know the diagnosis. Um, but one way or another, they were very close to dying.

So he—and he took all of this very, very seriously. I mean, he was—he was quite earnest in his quest to prove that there was a soul by showing that it had weight. Uh, he designed a special scale, like a bed scale made for this explicit purpose. And a very accurate—it could get a perfect weight within five grams.

Justin: Seems good.

Sydnee: Pretty good, pretty good.

Justin: For that time, especially.

Sydnee: Yes. So, he—he designed this bed scale so you could just put the person on this bed... and watch the weight. Once you got the scales balanced. Everything—everything would work well.

Um, so he—he had everything and he recorded everything that happened. They're very—very detailed notes, as it was happening. Uh, in the final results, it should be noted that he could not include two of the patients.

Um, so he was rigorous about this. He didn't just throw all the data in there. Um, one of the patients passed away before any measurements—or before all the measurements could be taken, and so he didn't feel like that it was accurate enough data.

Um, it's—it's interesting, if you read his accounts of why he excluded that, uh—that patient from his results. Uh, he says that people who did not agree with the work he was doing, opponents of his ideas, interfered with the process.

Justin: Weird.

Sydnee: I know. That's a story I would love to know more about.

Justin: It makes sense, though. I mean, this is gonna be pol—religion is already very polarizing and, I mean, I can imagine... both sides of that debate not really feeling comfortable with this [snorts quietly] sort of research.

Sydnee: Well, not only that, but, uh, it's such a personal thing, and it can differ so much between different, like, religious beliefs and cultural traditions in terms of death and what should happen surrounding that.

You can imagine that some people would not be comfortable with scales and scientists and notebooks and pens and... measurements.

Justin: It's also just another friggin' thing to worry about. Is my soul too heavy? Is it too light? Do I need to tone up my soul?

Sydnee: [laughs quietly]

Justin: You know what I mean?

Sydnee: Uh, so he—so this person was not included in the final data, and the other one was not included because they only got the patient on the scale for five minutes prior to them passing away, and he felt even though he got measurements, he didn't feel like that there was a long enough time period to have really gotten everything set. Uh, he didn't—he felt like it was rushed data and he wasn't comfortable with it, so.

Justin: What about the four good eggs? How did it go for them?

Sydnee: Well, Justin, I wanna tell you about the four that he did include in his results... but first, let's go to the billing department.

Justin: Let's go!

[ad break]

Justin: So, we've got four patients that—that were counted in the, uh—in the soul weight research.

Sydnee: Yes. So, in the—in the final—in the final paper that he would write up eventually, there are four, all male, patients with tuberculosis in the results. Um, what he found, as he did his examinations of each one, is that one of them lost weight... quite suddenly, at the moment of passing.

Justin: Okay.

Sydnee: Like, an immediate loss of weight, as you would predict if you believed that the soul had matter and left the body immediately at the time of death. This patient seemed to follow that hypothesis.

Justin: Mm-hmm.

Sydnee: Two of them also lost weight right away, but then within a very short period of time, just a minute or so, lost even more.

Justin: Hm.

Sydnee: So... what did *that* mean?

Justin: I don't know.

Sydnee: Well, he didn't either. There was some talk. Are there multiple souls?

Justin: A second soul—there's two souls.

Sydnee: Are there multiple souls?

Justin: There could be beyond two souls.

Sydnee: We don't know.

Justin: We don't know.

Sydnee: Um... is this where thetans come into play? [laughs quietly]

Justin: Did you say Satan?

Sydnee: Thetan.

Justin: Thetan, yes.

Sydnee: Isn't that what they're called?

Justin: Yes, it's thetans. Wouldn't that be weird if this guy was like, "I did my soul weight research and it turns out Scientology is real." [laughs quietly]

Sydnee: [laughs]

Justin: "I'm sorry. I'm sorry, everybody! It's—"

Sydnee: Spoilers: Dr. MacDougall does not have anything to do with Scientology, to my knowledge.

Justin: No.

Sydnee: [through laughter] He might have something to do with Scientology.

Siri: Okay.

Justin: Well—b—uh, Siri has—approves. Um—

Sydnee: Ooh. Ooh.

Justin: Oh no.

Sydnee: She's listening because we started talking about Scientology!

Justin: [crosstalk] Tommy Cru—Tommy C. turned—[stammers] turned on my watch to listen in.

Sydnee: You gotta be careful! It doesn't matter if that's what the episode is about or not. You start talking about that...

Justin: They'll find it.

Sydnee: Uh, so anyway, um, two of them lost weight and then lost a little more, and then the last one did also lose weight immediately, but then put it back on right away. So...

Justin: Not—not much to—unless the soul was like, "I'm not ready."

Sydnee: So with—with those results, you're probably thinking, "Well, you can't conclude literally anything."

Justin: No, yeah.

Sydnee: Well, what he did conclude... is that based on the patient who did lose weight and keep it off—[laughs quietly] and not lose more, stayed steady—based on that, uh, in terms of—I guess this is, like, pseudomedical history? We have deduced that the human soul weighs 21.3 grams.

So if you heard the concept 21 grams—there's a movie. There's—it is a—it is known. It is in popular culture, or 3/4 of an ounce, about 21.3 grams. This is where—

Justin: Its about 21 paper clips is what I learned in—in school. If you need—if you need, uh, help conceiving of it.

Sydnee: Five nickels, I think somebody said.

Justin: Sure. I mean, we can do this all day. [wheezes]

Sydnee: [laughs] Oh no.

Justin: One—one—one one hundredth of a Sony PlayStation that you've chipped off. I mean, we could...

Sydnee: So, anyway, this is where—so, he deduced that the human soul weighs 21 grams. Now, you're probably already thinking, "Well... this seems specious." Um—

Justin: I don't trust this.

Sydnee: This was based on just the one person.

Justin: Just one person. And he did do six. [holding back laughter] So—

Sydnee: And he tossed two out of the data. Four were included. The other three—

Justin: Of the data. [holding back laughter] He didn't toss two out... once they had pa—their *data* he tossed out.

Sydnee: No, of the d—yes, of your block of data, two subjects were removed. Their data was removed. Um, this is just... how you talk about in—

Justin: I know. I'm just kidding.

Sydnee: —just in a study. No, no one was physically tossed. Uh, so... and the other three who he did include, uh, reportedly lost about that much, at first anyway... which is not very precise.

Justin: Still seeming pretty sketchy to me, Sydster.

Sydnee: He did account for some things. So I do—I do want to address, like, okay. It is kind of weird that exactly at the moment that this individual passed on from—from this mortal coil, he lost 21.3 grams. That is a very—okay, why?

So, you probably are already yelling at the podcast some ideas, or at least thinking some ideas as to why this might happen.

Justin: [holding back laughter] Please don't yell at the podcast.

Sydnee: Um—[laughs] one thing that is addressed within the—within the paper, which you can read, his—his paper that I'll get to that he eventually publishes. Uh, the—if a patient evacuates their bowels or bladder at the time of death, won't that change the weight?

Justin: Still on the scale.

Sydnee: Exactly. That is the way he controlled for that. Everything was kept on the scale, so whether it was inside the body or out, it was all right there, so that should not change the weight. And this was all documented and measured when this occurred, so, all kept track of.

Uh, in addition, he had already figured out the amount of weight that can be lost due to what we call insensible losses. So, that's just, like... sweat, or evaporation from your skin. Just, like, we—we lose weight that way.

Justin: Yeah.

Sydnee: Slowly, as you may imagine. Very, very slowly. So he already knew that that was lost at about 1/60th of an ounce per minute. So, that—insensible losses could not account for a sudden drop of 21 grams.

Justin: Okay.

Sydnee: Does that make sense?

Justin: Yeah.

Sydnee: Okay. Finally, there was this thought. Maybe it's just the final exhalation.

Justin: You let that least breath go, you don't take another one in, and maybe there's—

Sydnee: Maybe that's it. So, in order to check this out, the researchers took turns getting up on the bed scale and breathing in and out very vigorously.

Justin: [snorts]

Sydnee: [laughs quietly]

Justin: It's a good day of science, everyone.

Sydnee: [laughs] I know. I wish—I have to imagine—I don't know. I don't—I don't have any, um... evidence that there were medical students involved in this. Uh—

Justin: [laughs]

Sydnee: —uh, but if there were medical students involved in this, then they would probably be forced to, like, "Hey, why don't you test that part out? Just hop on the bed and breathe really hard in and out and let us watch the scale, and then write all that down. Thank you. That's—" I'm sorry, medical students. [laughs quietly]

Justin: Yeah. You were probably on that—on that, uh, assignment.

Sydnee: Yeah. I don't think there were medical students involved, though. I think old Dr. MacDougall hopped up on the bed and did this himself. But they watched the scale as they, uh, very... aggressively breathed, and saw that—saw no change. That did no change the scales.

So he included all that so that people wouldn't call into question his very scientific conclusion that the human soul weighs 21.3 grams.

So, like any good scientist, he knew that the only way to ensure that a result is meaningful is to reproduce it.

Justin: Sure.

Sydnee: Right?

Justin: Science.

Sydnee: So, he decided he needed to do this again to try to prove this 21 gram theory. But, as I've already said, it was difficult to find human subjects for his experiment. Um, and so he decided, you know what? It would be easier if we switched to an animal.

Justin: Okay.

Sydnee: So, if I can find an animal that is near death and weigh them right before and right after, that might be an easier... [pauses] it doesn't sound easier, personally.

Justin: No. It sounds bad.

Sydnee: Yes. Uh, he did—he found that it was harder in terms of, like, keeping the scales balanced and knowing the exact moment of passing. All of that became more fraught with animals. He did use dogs.

Uh, and after 15 trials of this, he wrote that there was no difference in their weight before and after. The scales did not change at all. And so what you may think is that this invalidated his previous results.

Justin: Right.

Sydnee: And led him to believe that his scales were perhaps not as perfect as he thought. But instead, what it convinced him of firmly was the idea that dogs do not have souls.

Justin: Aw, man!

Sydnee: I know.

Justin: Oh, no. Our listenership is not going to enjoy that. They—this is a heel turn, as far as they're concerned.

Sydnee: [laughs quietly] Before you start emailing me, *I* am not saying dogs do not have souls.

Justin: No, all dogs go to heaven!

Sydnee: Exactly.

Justin: And how does that work if they don't have souls? Think about the—he didn't even think about that all the way through. If it'd—if he had even thought for a second about the movie that would be released several decades later, *All Dogs Go To Heaven*.

Sydnee: Which has, uh, some of the best cartoon pizza that you'll ever see...

Justin: Yeah.

Sydnee: ... in a movie.

Justin: Of course you knew that if you listen to our other podcast, *Syd Ranks All Cartoon Pizzas*.

Sydnee: [laughs] I'm just saying. It's in the—it's in the—

Justin: You know where it looks bad is *Teenage Mutant Ninja T—*

Sydnee: "[singing] What's mine is yours, what's yours is mine." I sing this to the girls all the time!

Justin: It looks bad on *Teenage Mutant Ninja Turtles*. It's just—it looks like a sloppy ghost with red eyes. It's terrible. The pizza on that show looks terrible.

Sydnee: Yeah.

Justin: Anyway. Sorry. Brief digression. Go back to existen—I would—I'd love to r—I—

Sydnee: [simultaneously] Read an—read an *Archie* if you—if you ever want to crave a hamburger.

Justin: I'd love to return to the existential crisis you were giving me if you wanna go ahead and just keep truckin' along.

Sydnee: Sorry. So, again, please do not send me angry emails. Dr. MacDougall is the one who said dogs do not have souls, not Dr. McElroy. I do not agree. With—with any of this, really. Um—[laughs quietly]

Justin: [laughs]

Sydnee: —but, uh—but that—that is what he would put when he finally published his work. Six years later, April of 1907. Um, in *American Medicine*, in a paper titled "Hypothesis Concerning Soul Substance Together with Experimental Evidence of the Existence of Such Substance."

It's... you know, it's really a missed opportunity. When you read these titles and you know that what—what—what is within this paper is the weight of the human soul... the fact that—

Justin: Yeah.

Sydnee: —he did not publish a paper titled "The Weight of the Human Soul... "

Justin: [laughs] Like, when we publish this podcast, it will be called "The Weight of the Human Soul."

Sydnee: [laughs]

Justin: We're not going to bury the lead.

Sydnee: We're not gonna call it "Hypothesis Concerning Soul Substance Together with Experimental Evidence of the Existence of Such Substance."

Justin: No. No one listens to that.

Sydnee: No. Uh—

Justin: Maybe he kinda knew, like... "Ehh, I may not want all the attention right now. This is a little specious."

Sydnee: Hey, Justin? You're actually right.

Justin: [holding back laughter] Really?

Sydnee: There is evidence to believe he—he did not intend for this to be quite the, um... the media... [pauses] I don't know. Attention-getter that it was.

Uh, he... he writes in his paper that obviously this was incredibly preliminary. Obviously there were many factors that still need to be controlled for. This should be reproduced many times. You know, I—I am not in any way saying that this is a fact, I'm just sharing this data, and I would encourage other people to continue these investigations, because I think this is worthwhile. I think that this—there is something here that we could investigate and measure as scientists, and I think we should do it.

Um, however... the m—the media and the scientific community went wild with this. It's very sexy. It's very—

Justin: Sure, yeah.

Sydnee: Yeah, of course you want to talk about it. Um, the New York Times actually ran an article on it, um, about the doctor who weighed the soul. And a lot of people started—it's funny, because he talks about all the things that you can't conclude based on just his one result. Like, he very clear in saying that, like, this is not the end all be all. But people keep shouting at him. [laughs quietly] All the things that he has already admitted.

Justin: Yeah.

Sydnee: I felt like—sometimes when I'm in a meeting, I'll say something, but nobody will hear it until one of my male colleagues will also say it, and then everybody will go, "Ohh, that's such a good idea."

[pauses]

I—I imagine that Dr. MacDougall may have had some of those... may have understood the way that felt, way back then in 1907.

Justin: Mm-hmm.

Sydnee: Uh, because he—he was saying, "No, I wasn't saying that this is perfect! Yes, I know it's flawed! Yes, I know I didn't use this data, and this other data was conflicting. And I know that the dog thing really doesn't make any sense. I get all that!"

Justin: "All I'm sayin' is I watched 15 dogs die, and also 6 people, and one of 'em didn't count, and the human soul weighs 21 grams."

Sydnee: [laughs]

Justin: "This is my—this is my thing. That's all I'm—that's all I'm saying. You draw your own conclusions! All I'll say is, I watched 20 souls gets snuffed out [snorts] except I think 6, 'cause I don't think dogs have souls. Let me come back to that. I've gotten off track. Anyway, the human soul is 21 grams."

Sydnee: So... he—I—I feel—

Justin: That reminds me—it's so specific, it reminds me of Team America. [through laughter] Freedom costs a buck o' five.

Sydnee: [laughs quietly] I feel kind of bad for him, 'cause he was very transparent with how he did everything. I mean, the reason I know so much about this is 'cause he wrote it down! It's straight from him.

Justin: Yeah, you have to be transparent if you're talking—if it's about the soul.

Sydnee: So, uh, and it was also, I think—you know, the—there have to have been doctors like me who were like, "Why are you even—just don't!"

Justin: "Just don't."

Sydnee: "Just, like—we don't have antibiotics yet!"

Justin: [laughs]

Sydnee: "Like, we can't fix literally anything right now. Why is this what you're spending your time on?"

Um, so, according to the New York Times article, he had said that he was going to investigate the soul further with his research. He intended to try to take pictures of it using X-rays, uh, were going to be his next investigations. But I—I don't know if those experiments ever happened. There's no record of what he did with the rest of his—his years on Earth, before—

Justin: Weird.

Sydnee: —uh... I won't—I won't talk about his passing, because you hate when I do that on this show.

Justin: But—

Sydnee: And I don't have much to say about I.

Justin: —let's just say that... [snorts quietly] he's not alive now.

Sydnee: Dr. MacDougall is no longer with us. As you—as you may have guessed. This is 1907.

Justin: Yeah.

Sydnee: [laughs] Um, so, other people throughout time have tried to repeat these experiments, because this concept—it's—if you think about how tiny this study was—

Justin: Yeah.

Sydnee: —how small the number participants and the amount of data and how inconsistent—

Justin: Basically one, right? I mean, it's basically one.

Sydnee: Really, really. I mean, it—the fact that this has had these echoes—I mean, it just—what it speaks to is how, um... enraptured by this idea so many are. Uh, both within the scientific community where we brush up against all of these kind of ideas, especially in the medical community, on a regular basis. But then... don't have anything to say about them that is evidence-based 'cause, you know, it's—it's faith, it's belief, it's spiritualism. It's not science.

Uh, but in the lay-public, who are fascinated with this idea. Um, so there—other people tried to repeat it, mainly with animals. Um, one researcher concluded that mice, much like dogs, have no souls.

Justin: Okay. I'm—just off the top of my head, *Stuart Little*. *Ratatouille*. *An American Tail*. *An American Tail: Fievel Goes West*. *Stuart Little 2*. Okay. So that's five.

Sydnee: Mickey.

Justin: Mickey! Thank you! Minnie! Mortimer? Jury out on Mortimer. Don't know about that guy. Can be a little suspicious.

Sydnee: I am surprised that in the debate of whether or not—

Justin: [loudly] Danger Mouse!

Sydnee: —whether or not—Mighty Mouse—whether or not—

Justin: [quietly] Thank you.

Sydnee: —mice have souls—Gadget! Sorry.

Justin: [laughs quietly]

Sydnee: I am—I—[laughs] I am surprised that in this debate, you come down on the side of mice do have souls, because you are *terrified* of mice.

Justin: Oh, no. My—my belief that the lives of mice is what them so scary to me. If I thought that they were soulless, like bugs, then I would just get a broom and swat them out the window and watch them go careening through—but they're a living being. That's what makes it so scary to me.

Sydnee: Why—why don't bugs have souls, honey?

Justin: What?

Sydnee: Why do you contend that bugs don't have souls?

Justin: 'Cause I didn't like *A Bug's Life* very much. The other movies were more effective, I don't know what to tell you. They didn't—

Sydnee: What about—what about *Bee Movie*?

Justin: *Bee Movie*. Did not see. Do own the DVD.

Sydnee: [laughs]

Justin: Am gonna check it out very soon. I think it's just around the corner.

Sydnee: Uh... okay. So, as recently as 2001, this experiment... as it were... was repeated with sheep. Um, and the researchers concluded that sheep actually gain weight at their time of death.

Justin: Nice.

Sydnee: So...

Justin: They take on someone else's soul—

Sydnee: [laughs quietly]

Justin: —and your soul gets trapped inside a sheep's corpse.

Sydnee: I don't—I don't know what that means.

Justin: That's the afterlife, folks! Sorry.

Sydnee: Do—do with that what you will. But the—the 21 grams idea has... far outlived the—the scientist who, uh, came up with it. We—there is the movie I didn't see, but it was called that. Um, there are—there is music, there is, uh, manga, books. An episode of *Welcome to Nightvale* references the 21 grams.

Justin: I can't believe you would promote another podcast. Even a wonderful podcast that everybody should check out.

Sydnee: I, uh... I don't think that there's anybody who listens to our podcast who isn't aware of *Welcome to Nightvale*.

Justin: Hey—

Sydnee: I hate to tell you this.

Justin: On the off chance: go listen to *Welcome to Nightvale*. Start at the beginning. You'll—you'll thank us.

Sydnee: It's an amazing podcast. But, uh... but I just—I just think it's interesting that this idea captured the imagination of a doctor who has—I mean, we have no business [through laughter] investigating this.

Justin: No. Clearly not. I gotta say, science—

Sydnee: This is not what we're trained in.

Justin: If I was give this one another title other than *The Weight of the Human Soul*, I would be like—I'd—it'd be something like *Science Biffed It*, 'cause you guys biffed this one. [laughs quietly]

Sydnee: But it's, uh—it—and the—and I should say, if I haven't made it clear: the medical community, the scientific community, have all rejected this entire idea.

Justin: Yeahhh...

Sydnee: Um, these further investigations that have been have not been done, like... uh... necessarily [laughs quietly] by... people actually...

Justin: Go on.

Sydnee: ... within—with—

Justin: Go on, Syd.

Sydnee: —I would say that this is, uh, fringe science?

Justin: Ooh. I love that—

Sydnee: Perhaps?

Justin: —love that show.

Sydnee: Perhaps pseudoscience. Um, not—not science as we know and love on this show. But, uh—but I think it is an interesting thing to think about. Um, with— with Dr. MacDougall's time on Earth, he did this very strange thing. And, uh, we will remember him forever for it.

Justin: In closing, just weigh Casper! He's right there.

Sydnee: [laughs quietly]

Justin: Thanks so much for listening to our podcast, *Sawbones*. We hope you've enjoyed yourself. Uh, we sure have appreciated you bein' there.

Hey, um—just... not for nothing, but, uh, me and my brothers and my dad wrote a book called *The Adventure Zone*. It's, uh, *Petals to the Metal*. It's the third in a series. Um, it comes—the third book comes out, uh, this—well, it comes out—no, I was gonna say today, but it comes Tuesday, July 14th. If you want to preorder a copy, it would—I would sure appreciate it.

You can go to theadventurezonecomic.com and do that. Um, and you can get the other ones there, too. There's also, like, a—a three book box set if you wanna just catch up, get 'em all at once, but that's not comin' til a little later this year.

Anyway, um, that's my little plug for our book.

Sydnee: You're allowed to do that.

Justin: Thanks.

Sydnee: I'll—I'll allow it.

Justin: Thanks.

Sydnee: Um, I promise you we will—we will get back to important work again next week. But, um—but can—but please do—

Justin: Syd wanted to just take a quick, fun diversion into mortality and existential crises. [through laughter] And then we'll get back to the hard stuff next time.

Sydnee: Is this not... I—sometimes in the urgency of the moment, it helps to step back and look at the... [pauses] the vastness of time and space in which we now exist.

Justin: Do you remember I said I haven't been meditating lately because things have been really good? [pauses] Set aside a few minutes for me [holding back laughter] after the show is done, so I can get this good ol' anxiety back under control.

Sydnee: I would—I would encourage you all, however you choose, to take care of yourselves. Um, but to continue the good work that everyone is doing. Again, protesting, speaking out, donating, calling your representatives, educating yourselves, being—being better. Um, better at anti-racism.

And please wear your masks. If you're leaving the house, as much as you can—

Justin: Yeah, it's gettin' bad out there, guys. Please—

Sydnee: It—it really is. It's, um... I take it personally now, 'cause it's getting bad right here where we live. Um—

Justin: [holding back laughter] Now it's real. [snorts]

Sydnee: No, I mean, it's—

Justin: Sydnee was all for it before—

Sydnee: Ha ha.

Justin: —but now... uh—

Sydnee: No, but please, wear your masks.

Justin: Wear your masks.

Sydnee: If you leave the house. You are not—they will not deprive you of oxygen. I see that idea out there a lot.

Justin: Oh my God.

Sydnee: Um, it—

Justin: Don't make us do a whole episode about how it's fine.

Sydnee: If—if so, surgeons would not be able to do surgery. They wear masks the whole time. They would pass out seconds into surgeries, and all surgeries would be failures forever. But they're not, because masks will not deprive you of oxygen. They do not make you retain CO2. Please wear your masks, wash your hands, and *stay home* as much as you possibly can.

Justin: Thank you so much for listening, and be sure to join us again next week for *Sawbones*. Until next time, my name is Justin McElroy.

Sydnee: I'm Sydnee McElroy.

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

[theme music plays]

[chord]

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