Episode Book

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What the Evidence on Daylight Saving Actually Shows

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SYNOPSIS

Daylight saving time is widely accused of ruining health and energy budgets, but the evidence tells a far more complicated story. From Benjamin Franklin's satirical candle essay to a New Zealand entomologist seeking extra evening hours to hunt insects, the true origins contradict modern folklore. A 157-study systematic review reveals mixed impacts across transitions, highlighting everything from heart attacks and retinal vascular risks to decreased mortality and geographic position inside time zones.

TRANSCRIPT



Corn

Nine adults. The entire "springing forward gives you a permanent sleep debt" claim, the one sleep societies built their official position on, traces back to a study of nine healthy adults in Finland, watched for one week. Nine people, one week, one time change, and it's been quoted as settled science ever since.



Herman

Which is a shocking bit of scholarship archaeology, and it's the perfect entry point for this one, because the prompt this week comes from Hannah, not Daniel. She's fed up with winter time. Dark at what she swears is quarter to four, the baby's schedule wrecked, the day gone before the afternoon is finished. And underneath the complaint she's asking a serious pair of questions. Does the whole twice-a-year ritual have any defensible reason to exist, and specifically, why does Israel feel like the sun gives up at mid-afternoon when we're not remotely near the Arctic?



Corn

She also asked, and I'm quoting because it's better than my paraphrase, whether it's worth "disrupting everyone's schedules twice a year" so that early risers get some morning light. That's the question I want to hold onto, because it's the one the evidence answers most uncomfortably. Let's start with the part everyone thinks they know, why this exists, because almost all of it is wrong.



Herman

Before we get into the history, I want to frame what the real question is, because "is the clock change annoying" is not it. The real question is who the current arrangement is actually serving. About a third of the world's countries still use daylight saving time, and the latest count puts it at seventy-one countries or autonomous territories still changing clocks, including us, including Palestine, including Lebanon. This is a live global disagreement, not a fringe practice dying off.



Corn

Seventy-one countries all convinced they're each the only ones doing it wrong.



Herman

And the reason it's still live is that the evidence refuses to pick a side. There's a systematic review published this year, a hundred and fifty-seven studies from thirty-six countries, and its headline finding is that the story everyone tells, that the transitions are uniformly bad for you, is simply not supported. There are benefits and harms on both sides of the calendar. The interesting question isn't whether the change is bad. It's which change, for whom, and where on the map you happen to be standing.



Corn

That last part is where Hannah lives, and we'll get there. First, the mythology.



Herman

So, Benjamin Franklin. Everybody knows Franklin invented daylight saving time. He didn't. In 1784 he wrote a satirical letter to a Paris journal complaining that Parisians sleep through the morning sunshine and burn candles all evening. His proposed remedies were taxing window shutters, rationing candles, and waking the entire city at sunrise with church bells and cannon fire.



Corn

A man who owned a sloth would understand the appeal of the cannons.



Herman

He never proposed changing the clocks. Eighteenth-century Europe didn't run on schedules precise enough for it to matter. Nobody in 1784 was missing a nine a.m. stand-up meeting. The letter was a joke about laziness and candle budgets, and somewhere along the way it got promoted to founding policy document.



Corn

So who actually proposed it?



Herman

A New Zealand entomologist named George Hudson, in 1895, and this is my favorite origin story in the whole subject because it's so unglamorous. Hudson wanted more daylight after work to collect insects. That's it. He proposed shifting clocks two hours in spring to the Wellington Philosophical Society, and his stated goal was aligning social start times closer to sunrise so evenings were usable for leisure. The people who've analyzed his paper say he listed energy savings only as a by-effect. The founding father of daylight saving time wanted to catch bugs after dinner.



Corn

An hour of national policy so one man could look at moths. I respect the honesty of it, at least. It's the only original justification that never pretended to be anything else.



Herman

Then William Willett proposed British Summer Time in 1907, and his pitch was energy, and Parliament sat on it for nine years. The first actual implementation anywhere was local, Port Arthur and Fort William in Ontario, 1908. The first nationwide adoption was Germany and Austria-Hungary, both on the thirtieth of April, 1916, as a war measure. Coal for the war effort. Then the wave that matters for us, a lot of countries adopted it in the nineteen-seventies energy crisis, which is when the modern mythology got set in concrete.



Corn

The mythology being the farmers.



Herman

The farmers, yes. This is the most backwards thing in the whole story. Daylight saving time was designed for clock-scheduled industrial societies, factory shifts, office hours, trains. It was designed explicitly in contrast to agrarian societies, whose daily routines are governed by the length of daylight and by solar time. Farmers work by the sun. The sun does not observe daylight saving time. The group the whole system was least designed for is the group that gets credited with inventing it.



Corn

A farmer being told the clock moved is a man being informed that a word changed.



Herman

The widely repeated version is that farm lobbies actually opposed it, and that part I'd hold more loosely, it's repeated a lot but I'm not sure the sourcing is as solid as the design point. What's solid is that "for the farmers" is not just wrong, it's inverted.



Corn

And energy?



Herman

Heavily disputed, and the dispute is honest. The original case only counted lighting. Once you count what actually happens in a modern building across a year, heating in the cold mornings, cooling in the warm evenings, fuel for the extra evening trips people take with their extra daylight, the savings shrink, vanish, or reverse depending on which study you read and which country it was done in. Nobody has ever produced a clean number that survives scrutiny.



Corn

So the energy rationale is contested, the farmers rationale is backwards, and Franklin's contribution was a joke about cannons. What survives?



Herman

Two things. The leisure-evening rationale, which is Hudson's bug-hunting, and which is real, people use and value the extra evening hour of daylight, that's measurable in behavior, not just in surveys. And the "better use of daylight" rationale, which is real but conditional. At temperate latitudes at the summer solstice, the sun rises around half four and sets around half seven in the evening on standard time. Almost nobody is awake to use the half-four sunrise. Shift the clock, and you move that unusable morning hour to the evening where people actually live.



Corn

Conditional on what?



Herman

On where you sit inside your time zone. This is the hinge of the whole episode, so I want to land it properly. The effect of daylight saving time varies according to how far east or west your location is within its time zone. Locations farther east inside the zone benefit more from it. Locations farther west in the same zone benefit less, and get earlier sunsets in clock time. A time zone is a band roughly fifteen degrees of longitude wide, and the clock is set for the middle of the band. If you're at the eastern edge of your band, your solar noon comes before clock noon, everything happens early. If you're at the western edge, solar noon comes after clock noon, and your evenings are structurally darker than the zone's clock promises.



Corn

Hold on. You're telling me the question isn't "should we change the clocks," it's "who drew the line and where did they draw it."



Herman

That's a lot of the question, yes. And near the equator none of this matters, because daylight barely varies across the year there, which is why Hawaii and the tropical countries don't bother.



Corn

So the evidence on why we do this is mixed, which leads us to a word from a sponsor.

L

Larry

Are you tired of feeling robbed every time the clocks jump forward and steal an hour of your evening? Then you need ChronoGuard, the gentle remedy that resets your internal clock so completely you will never notice a time change again, and your baby will sleep through every spring and autumn shift like a stone.

L

Larry

Ask your doctor about ChronoGuard today, though please note it may cause mild drowsiness, faint sunrise confusion, spontaneous arctic-circle behavior, involuntary shutter-tax flashbacks, and in rare cases a permanent summer time that sets at three forty five in the afternoon and refuses to leave.



Corn

The baby sleeping like a stone is the part that'll sell it in this house.



Herman

I took some once, a few years back. I don't want to get into it. Anyway, the transitions themselves. This is where the story everyone tells is about to get complicated.



Corn

Give me the version people tell first.



Herman

The version people tell is: the spring transition kills people. Heart attacks go up, traffic accidents go up, everyone's sleep-deprived for a week, and the American Academy of Sleep Medicine has said for years that the spring shift creates ongoing sleep debt, the loss of one hour that accrues daily. And that claim is quoted everywhere. And this year's systematic review, the hundred-and-fifty-seven-study one, actually went and checked the study the sleep debt claim was built on.



Corn

The nine Finns.



Herman

Nine healthy adults, aged twenty to forty, living in Finland, tracked across one transition for one week. The review's assessment is that this is not sufficient to support the statement. Nine people for one week underwrote a national policy position.



Corn

I've seen bigger sample sizes in a minyan. What did the rest of the hundred and fifty-seven studies actually find?



Herman

A mixed picture, and the mix is the finding. For the spring transition: increased acute myocardial infarction, so the heart-attack story holds up, and increased fatal traffic accidents. Also decreased crimes involving physical harm, which almost nobody mentions. For the autumn transition, the one we just did: decreased all-cause mortality, decreased workplace accidents, and increased violent crime. So the week after we fall back, fewer people die and get hurt at work, more people hurt each other.



Corn

The clocks go back and the population turns feral. That tracks with my November mood, honestly.



Herman

And then living with summer time as a stable state, not the transition, just the months on summer time compared to standard time, that's associated with decreased all-cause mortality and fewer traffic accidents. Standard time may be associated with shorter sleep duration in winter. No clear, consistent effects on psychiatric outcomes at the population level, though there's a review this year arguing people with chronic mental illness, whose circadian systems are already dysregulated, may face elevated risk from the abrupt shift, which is plausible even if the population-level numbers don't show it.



Corn

So the framing everyone uses, DST bad, clock change bad, is it actually fair?



Herman

The review's own words are that the messaging of transitions and DST during summer months being uniformly detrimental is not supported, and they recommend a balanced approach rather than picking a side. The harms are real, the heart attacks after spring forward are real. But so are the benefits, and they're not on anyone's poster.



Corn

Is there anything on the acute harms beyond heart attacks? You mentioned a retinal study, I think.



Herman

Chan and colleagues this year, Scientific Reports. Twelve and a half million US patients, looking at retinal vascular disease around the transitions. In the month after the spring transition, higher risk of proliferative diabetic retinopathy and neovascular AMD, the wet form of macular degeneration. In the month after the autumn transition, lower risk of retinal vein occlusion. Directionally consistent with everything else: spring is the bad one, autumn is neutral to mildly good.



Corn

A twelve-million-person study about the backs of people's eyes. Somewhere a grant committee signed off on that and I'd like to thank them.



Herman

Twelve million patients is actually the right sample size for this kind of signal, because the effect is small and you need the power. That's not a knock on the study. If anything it's the compliment.



Corn

Now the question Hannah actually cares about, and Ezra has opinions on. If we stop changing the clocks, which clock do we stop on? Summer or winter?



Herman

This is where the scientists and the public split cleanly, and it's the most interesting political fact in the whole subject. The chronobiology consensus is firm: permanent standard time, permanent winter time. Position statements from the Society for Research on Biological Rhythms, the Sleep Research Society, the American Academy of Sleep Medicine, the British Sleep Society, all of them say abolish the change and lock to winter time. Roenneberg's argument, the big one from 2019, is that permanent summer time means social time running permanently ahead of solar time, and the sun coming up an hour later in clock terms, which pushes everyone into chronic circadian misalignment, worst in winter.



Corn

And the public?



Herman

Prefers permanent summer time. Dominates the polls, everywhere it's asked. People want the evening light, not the morning light. So you have the exact situation where the experts' recommended fix is the one voters like least, and the sleep societies have been trying to educate people out of their preference, while, and this is the counterargument, paying very little attention to the downsides of permanent standard time, which include some dark winter evenings.



Corn

Has anyone actually run the experiment? A whole country on permanent summer time?



Herman

Twice, badly. The US tried it in the seventies and Russia tried it in 2011, and both reversed it, because the failure mode is exactly the one you'd predict. Winter sunrises coming up so late that kids are going to school and adults are commuting in the dark. The United States folded in under a year, public support collapsed once the December mornings arrived. Russia lasted a few years before rolling it back.



Corn

So the option the public wants has been tried twice and abandoned twice. That should be the end of the argument, except.



Herman

Except Canada just did it again. This year, British Columbia, Alberta, Manitoba and the Northwest Territories all abolished the change and went permanent summer time, joining Saskatchewan, which has effectively been on year-round summer time since 1966, and Yukon since 2020. Every Canadian jurisdiction that has stopped the change chose the option the sleep scientists warn against. And we should note the review's caution here, effects depend heavily on your latitude and where you sit in your time zone, so Canadian results don't transfer automatically to anyone else. That's a live experiment, not a settled answer.



Corn

That's the thing to watch, then. A country full of control groups. What about the countries that went the other way, just stopped everything?



Herman

Russia locked to permanent summer time, then reversed. Turkey's been on permanent summer time since 2017 with its own complaints about winter mornings. Iran, Mexico and Brazil all cancelled their arrangements in 2023, mostly to standard time. In Chile only the far-southern Magallanes region stopped. So the direction of travel is real, the change is being abandoned, but the destination is not agreed. Everyone agrees to stop changing. Nobody agrees on what to stop at.



Corn

You said earlier the review found nothing clear on children and animals. Say more about that gap.



Herman

On children's sleep and the clock change specifically, I haven't seen a solid dedicated study, and the same for animals, though the livestock complaints are old and consistent, dairy farmers will tell you the cows don't read the timetable. But I don't want to dress that up as evidence. It's an absence, and the honest thing is to say so. What we do know is that Ezra's reaction, refusing to accept the new timetable and waking at the old breakfast time, is exactly what you'd expect from a circadian system that doesn't take instructions.



Corn

Hannah would like the absence filled in by someone before Ezra turns three. All of this is the general case, though. Hannah's complaint is about Israel, and Israel turns out to be the reason the general case doesn't transfer.



Herman

Right, so let's do the map. Israel Standard Time is UTC plus two, the same clock as Egypt, Lebanon, Cyprus, Greece, Eastern Europe generally. Summer time is UTC plus three. Since 2013 the rule has been that summer time starts the Friday before the last Sunday of March and ends the last Sunday of October.



Corn

A Friday. Because of the Sabbath.



Herman

Because of the Sabbath, which means Israel springs forward two days before Europe does. Israel goes Thursday night into Friday morning, Europe waits for the weekend, and the Palestinian Authority sets its own dates, on Sunday night. We did an episode a while back about the time zone database that keeps all this straight, and the reason that database exists is that this stuff changes at short notice and phones get it wrong. On the same street, you can have two phones showing different times because one has an Israeli SIM and one has a Palestinian SIM, and both authorities have historically changed their dates on very little warning.



Corn

A whole conflict encoded in your clock display.



Herman

Now the actual question. Why does the sun set so early here? And the answer is longitude, not latitude. Israel sits at roughly thirty-four to thirty-five degrees east, but runs on UTC plus two, the same clock as Cairo and Athens. The clock in this zone is set for a band whose center is well to the west of us, so solar noon in Jerusalem falls well before twelve by the clock. Everything solar happens early here in clock terms. Sunrise early, sunset early. And the general principle we established earlier, that locations farther west in a zone get earlier clock-time sunsets, tells you what Israel is doing sitting at the western edge of UTC plus two in winter. In summer, on UTC plus three, we're even further from solar noon, which is why summer evenings here run so gloriously long. The same mechanism that gives us nine p.m. sunsets in June gives us four-something sunsets in December.



Corn

So Hannah's "quarter to four" feeling, that's not her imagination, but it's also not the clock change.



Herman

Mostly not. The clock change moves it one hour earlier in clock terms, but the structural earliness is the zone. And there's a wrinkle on timing, too. The earliest sunset in Tel Aviv lands in early December, not at the October change. The equation of time, the gap between solar time and clock time caused by the Earth's orbit being elliptical and tilted, means solar noon keeps drifting later into November and December. So the week we change the clocks feels like the darkest week, but the actual earliest sunset is weeks later, and then sunsets start creeping back out while mornings keep getting darker until the solstice. The "dark at quarter to four" feeling is real, and the calendar of it is subtler than it feels.



Corn

Could we fix it, though? That's her actual question. Stay on summer time, move the zone, something.



Herman

Nobody has formally evaluated an Israeli proposal to move to UTC plus three permanently or redraw the zone, so what follows is analysis, not a sourced finding. But here's the shape of it. Staying on summer time year-round gives you the later evening light and pushes winter sunrise past seven a.m., the exact weak spot that killed permanent summer time in the US and Russia. Moving the zone to UTC plus three permanently is the cleaner instrument for Hannah's complaint, because the problem is structural longitude, and a zone shift fixes the longitude without a seasonal switch. But it puts us out of sync with Egypt, Cyprus, Lebanon, and it makes the Palestinian Authority coordination problem worse, and that problem is already producing phones that disagree with each other on the same street.



Corn

So the lever that would actually give Hannah her evening light is the time zone, not the switch. Nobody in the argument is pulling that lever, because everyone's arguing about the switch.



Herman

So who is the current system serving? Here's where I've come out, and you're going to hate it. The clock change is a blunt tool aimed at a real problem. The real problem is that modern work and school start times sit far from sunrise in winter, and the clock change is the mechanism societies found to nudge the relationship between the timetable and the sun twice a year without anyone having to renegotiate the timetable. That's the case the defenders make, that the position statements only count the costs and forget what the clock regulation was solving. It delivers modest, mixed benefits, and charges two acute



Herman (continued)

disruptions a year for them, one of which measurably hurts people.



Corn

So it's a tax. A heart-attack tax levied every March to buy a slightly better alignment nobody can prove we need.



Herman

That's one honest way to price it. The other honest way is that the autumn change measurably saves lives and prevents workplace accidents, and we just collected that payment. I can hold both, and the review essentially says everyone should.



Corn

Which of the two would you actually pick, if you had the pen? Winter clock, summer clock, or keep the switch?



Herman

Honestly? I think I'd fix the zone before I fixed anything else. For Israel, a permanent zone that matches our longitude would do more than any decision about the switch. But I'd want it coordinated with the neighbors, which is the bit that's never going to happen cleanly.



Corn

My worry about abolishing the change entirely is the people nobody counts in these studies. The cleaners opening buildings at five, the shopkeepers, the parents doing the school run. You once said something about shift work and light exposure that I've never fully let go of, that the people whose schedules are least flexible are the ones the clock decisions move the most. Lock the clock and you've decided for all of them, permanently.



Herman

That's a fair objection, and there's a reason the studies keep coming out on both sides. It's why I don't trust anyone who says this is settled in either direction, including the people with the credentials.



Corn

You know who's never once been wrong about a clock in this house? The oven. It's been showing the wrong time for three years and it's never pretended otherwise.



Hilbert

No, Corn, the oven's not wrong, it's on Kuwait time, and my aunt knows it. She worked it out in 1988. I was doing shift maintenance for a radio transmitter outfit that year, and she called the switchboard to reach me about it, which took some doing. She has refused to change her kitchen clock in October for as long as I can remember. The clock stays where it is, and she keeps a card taped beside it with the offset written out in her own hand. Add one hour, except when it's already one hour, then don't. She re-derives the whole thing from first principles every March and every October, and she calls me each time to check her arithmetic. I have the first card, the 1988 one. She sent it to me when she rewrote it the following spring, thought I'd want it for reference. The tape's gone brown on the corners. The current card has an addendum in the bottom corner in different ink. Do not trust the oven. Nobody has ever identified what time the oven is on. She has a theory about Kuwait and she will defend it.



Herman

And you just… take the calls twice a year?



Hilbert

Of course I take the calls, Herman, you've met me. I keep my own card now, in my wallet. Which of my devices change themselves and which don't. Got burned once by a watch I'd assumed was smarter than it was, missed a job in Petah Tikva by fifty minutes. Now I verify everything. The wallet card doesn't say anything about Kuwait, I'll grant her that much.



Corn

Wait. You verify your clocks against her kitchen clock, and she verifies hers against yours?



Hilbert

No. She verifies against the muezzin down the road, which is solar, which is the only clock in that neighborhood that has never lied to anybody. I just check the card.



Herman

The muezzin is actually the more rigorous reference, that's the thing. Solar time, no transition, no zone. She's anchored to the sun and everything else in the house is anchored to her.



Hilbert

That's one way of putting it. She'd say the sun doesn't make mistakes, people do. I'll take her word for it, she's kept better records than the Knesset has.



Corn

She'd have settled the permanent summer time debate in an afternoon.



Hilbert

She settled it in 1988, Corn. Nobody asked her.



Corn

That's usually how it goes. Where does this leave the question Hannah actually asked?



Herman

I think it leaves it more open than she'll be happy with, but more open in an interesting way. The evidence isn't a verdict, it's a menu. The spring change hurts people, the autumn change helps them, living on summer time in summer is fine, and where you sit in your zone decides most of what you experience. The one clean thing Israel could do is the thing nobody is discussing, which is the zone itself.



Corn

And the thing worth watching is Canada. Four provinces just went permanent summer time this year, against the sleep scientists' advice, on purpose. Their first full winter on it is coming, and the December sunrises will be the tell. If the Canadian experiment survives its first January, the experts' consensus takes a real hit. If it collapses like the American and Russian ones did, we'll have our answer three times over.



Herman

And if nobody's measuring the children, someone should start with the children, because every parent in the country is running that trial at home in November with no control group and no one recording it.



Corn

Our producer is Hilbert Flumingtop, who has apparently been maintaining a parallel timekeeping system since before either of us could tell the hour. If you want more of this, try episode sixty-three thirty-nine, What Daylight Saving Actually Does to Health; episode twenty-four fifty, The Time Zone King and the Database That Runs the World; and episode seven thirty-four, The Illusion of Now. This has been My Weird Prompts. If you've enjoyed this one, tell a friend, or leave us a review wherever you get your podcasts. We'll be back soon.

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