

## Sentinel Chickens

by David W. Goldman

**A**s the pickup jolted over yet another pothole, chill morning air puffed in through the door's loose, rattling frame. Jack jammed his hands deeper into his jacket pockets.

"Not what you expected, is it?" asked Dr. Claypon.

He glanced over at her, smug in her big quilted vest. She drove with one-handed nonchalance, sipping occasionally from a travel mug.

Jack wore thin slacks and, under his windbreaker, a polo shirt. He wouldn't have minded a coffee of his own—he had assumed that somebody would hand him a cup when he showed up at the office for his first day of work.

Probably he should have asked why he was supposed to get there so early.

The truck bounced across a corrugation of ruts—last night's rain didn't seem to have done much to smooth the old dirt logging road. Scents of wet leaves and decaying timber blew in around the door.

Claypon went on, "I mean, a shiny new Ph.D. in epidemiology, and here you're getting out of bed at oh-dark-thirty to go feed a flock of birds."

He pulled his jacket tighter around him. “Don’t they make automatic feeders?”

Claypon snorted. “Can’t refill themselves.” With her mug she gestured over her shoulder toward the sacks in the cargo bed. She took another sip. “But really. I’m guessing you just assumed that after graduation you’d waltz into a job with the CDC. Where, no doubt, you’d be the one who solves CPNS.”

His gaze jerked toward his window, and he didn’t answer. He felt his cheeks warm.

She chuckled. “At least, that’s pretty much what I assumed when I got *my* degree.” She swerved to skirt a downed branch stretching halfway across the road. “CPNS, bird flu, AIDS—there’s always some sexy new pandemic to chase. But the boring old diseases? Somebody’s still got to keep tabs on those, too, hey?” She lifted her mug to her lips, tipping it nearly upside down for its final drops. She let out a small sigh as she set the mug onto the seat, next to her small backpack. “We can’t all get the glory.”

Jack considered the stains on the seat’s worn fabric, the jangling of the ailing heater fan, the crack growing down from the top edge of the windshield.

“No,” he said, “I guess not.”

She must have heard something in his voice.

“Hey, you want to work in Atlanta and see ‘Centers for Disease Control’ after your name? Well, fine, good for you. But listen—I’ve been at this a quarter-century now, and I can tell you that all the real action is out here, down at the county level. Who wrote the initial report about AIDS, back in the eighties? L.A. County Health Department. Who first identified CPNS three years ago? Arapahoe County, Colorado. While your CDC pals are sitting in meetings in their big, pretty buildings, we’re the ones gathering stats on

emergency room admissions and school absenteeism, chasing down outbreaks of food poisoning, watching disease trends.”

So, thought Jack, defensive much?

But he merely said, “And feeding chickens.”

She chuckled again. “Yup, one morning every other week. Nice break from paperwork. But I’ll tell you what, Dr. Graunt—if this is the year that our chickens detect Eastern equine encephalitis finally arriving in the Pacific Northwest, we’ll make sure that yours is the name in all the news interviews. They probably won’t misspell ‘John,’ anyhow.”

“I prefer Jack.”

Keeping her eyes on the road, mostly, she extended her free hand to him. “Jan.”

Jack pulled his hand out of its pocket just long enough for a quick handshake.

They drove on, rattling and bouncing. As he watched the interminable moss-wrapped trees pass by, Jack started to wonder exactly how far into this forest the Health Department kept its chickens.

“So,” Claypon said, “I’m told that I should ask what your dissertation topic was.”

Jack smiled. This, at least, was always fun.

“Mass delusions,” he said. “And convictional fads.”

“Okay, mass delusions I know about....”

“Fads of belief. Like the Salem witch trials, or the satanic-ritual panic of the late twentieth century.”

“Ah.”

He watched her begin to smile as she considered the possibilities. Epidemiologists all loved this stuff.

“What else?” she asked. “Did you include the Nigerian vanishing genitalia craze?”

“Sure. All the classics—the Mad Gasser of Mattoon, the 1954 Seattle windshield-pitting epidemic, you name it. Plus some that nobody’s really studied before, like the 1980s belief in systemic yeast infections, or the child-kidnapping hysteria of the past couple decades.”

The truck slowed. They turned onto a smaller, even bumpier road.

“Okay,” she said, “mass delusions and belief fads. What about them?”

He shifted in the seat, trying to find a warmer spot. “We’ve got lots of data points for most of those. Especially from online newspaper and government archives. And for the most recent ones, with all of their online support groups, after a few web searches you’ve got yourself a really massive database to work with. So I did a comparative time series analysis of reported incidents.”

“Huh.”

The pickup turned once more, and its speed dropped further. He figured they must be getting close to their destination.

Thoughtful, she said, “I suppose you’d see a sort of bell-shaped curve. A few reports at first, then lots more as the fad takes off. Then I’d expect them to plateau for a while, and eventually die away?”

He nodded. “Sure. But the data turn out to be really noisy. To get beyond that general description, I had to eliminate a surprising number of high-frequency components.”

“Yeah? Like what?”

“Well, some of them I could explain.” He shrugged. “Seasonal cycles, of course, for the longer-lasting delusions. And the windshield-pitting epidemic contained both four-hour and twelve-hour oscillations.” He let her ponder that for a moment before giving

her the answer: “People’s reactions to multiple newspaper editions coming out through the day, each containing the latest updates.”

“Nice!”

“Anyhow, once I got everything cleaned up, all the curves were nearly identical. Bell-shaped, like you guessed. Though left-skewed—the fads always drop off faster than they start.”

The road, now little more than a muddy path, emerged from the forest into an open field of clumpy grass and prickly-looking bushes.

She said, “Very nice, indeed. You’re publishing this, I hope.”

He frowned. “There’s one loose end I’d still like to figure out—a single case that doesn’t match the pattern. Came on more quickly than usual, plateaued for decades, and then all of a sudden, twelve years ago it just stopped. Overnight—literally—with no warning. I haven’t—”

“Damn!” Claypon stomped on the brake. The pickup slewed to a halt.

Jack tried to figure out what she was staring at through the streaked windshield. They’d just come around the final curve—directly ahead stood a chain-link fence enclosing a rectangular area nearly the size of the pickup. Inside was a wooden structure that looked like a small jungle gym with a roof and some partial walls.

But after Claypon shoved open her door and climbed out, she headed not toward the enclosure, but instead to a spot a few yards from the fence—where a fluffy brown chicken stood pecking at the grass. Noticing Claypon’s approach, the bird started walking in the opposite direction.

As Claypon chased after the now scuttling chicken, Jack got out of the truck to join her. But before he took his third step she shouted, “Check the gate!”

It took him a few seconds to realize what she meant. He turned to give the fenced enclosure a better examination.

The chain-link fencing covered the pen's top as well as its sides. And those sides reached not only down to the ground, but extended into it. He hadn't realized that chickens were such formidable escape artists.

As he hiked over, though, he saw that the pen's door—gate—was ajar. The four remaining occupants eyed him sleepily as he pushed it closed and set the latch. On the fence to his left—beneath a large sign explaining that this flock was the property of the Department of Health, and that trespassing and vandalism were not only strongly discouraged but in some vague way perhaps life-threatening—hung an open padlock.

Claypon strode over, breathing hard. She held the chicken against her stomach, its head bobbing forward and back.

He expected her to deposit the chicken inside, but she just glared past him at the padlock, shaking her head in disgust. “The department,” she explained, “pays a local teenager to come out here a couple times a week to collect eggs and clean out the manure. Not the first time this has happened.” She sighed. “At least today we didn't lose anybody.”

“I'm surprised they didn't all get out.”

“What?” She turned to face him, absently stroking the bird in her arms. “Not a lot of poultry experience, hey? These guys tend to stick with what they know.” She nodded toward the perching chickens. “Shelter, food, water—why leave?”

He frowned, looking again at the substantial, roofed-in pen.

“Ah,” she said. “Raccoons. Foxes and weasels. Hawks. We go to a lot of trouble to keep our sentinels safe and unmolested.”

“Except by mosquitos, right?” Trying to move the conversation past his mistaken assumption, Jack surveyed the area. “Where *are* the mosquitos, anyhow?”

Claypon pointed toward the edge of the clearing. “See where the ground rises over there? On the other side is a nice, scummy little pond. Perfect breeding conditions.” She nodded back toward the sun, still rising behind the trees at the field’s opposite side. “Once things warm up around here, not all the DEET in the world is going to save you from getting eaten alive.”

Jack looked at the chicken that Claypon still held, which had begun a soft clucking as if muttering to itself. “How about them? Are they protected by their feathers?”

“Nope.” She tucked the bird’s head against her arm; after a few seconds it quieted. “These guys will get bitten a couple hundred times each day. Well, each evening, mostly. But then that’s how they earn their keep, isn’t it? Speaking of which...”

She took a step forward, and Jack moved to open the pen’s gate for her. But instead of returning the chicken to its home, she strode past him, back toward the pickup.

When he caught up to her behind the truck, she held the chicken out to him. “Here—reach down from both sides and lift her. No, more like—yeah, that’s it.”

The bird struggled in Jack’s hands, trying to flap its pinned wings. He was surprised at how little it weighed.

Claypon lowered the pickup’s tailgate. She climbed onto the bed to drag a Styrofoam cooler and a plastic tackle box back to the edge, then hopped down.

She opened the tackle box to reveal syringes, rubber-stoppered test tubes, and other supplies. As she picked out various items and arranged them on the tailgate, she said, “When I’m by myself I sit on the ground and hold her in my lap. But with two people it’s a lot

easier.” She pulled on a pair of blue gloves. “Okay, so go ahead and grab both of her legs—no, just use one hand. Good. Now roll her over until she’s upside-down. That’s it—whoa, hold on tight! She’ll settle down in a few seconds. Yeah, let her rest her head against your arm. There you go.”

Claypon gently spread open one of the chicken’s wings. “Use your thumb to hold her wing like this.” As Jack adjusted his grip, Claypon flipped open the lid of the cooler and stuck a finger into the crushed ice inside. “I’m just going to moisten the feathers over the vein here, to keep them out of the way. When it’s your turn, though, we’ll have you pluck out enough of them to see what you’re doing.”

“My turn?”

She chuckled. “Ever hang out with any med students? They’ve got this saying about learning medical procedures: see one, do one, teach one.”

Jack swallowed. She was right—this definitely was not what he’d expected from a Ph.D. in epidemiology.

She grabbed the wing with one hand, her thumb pressing on what Jack assumed was the vein. The chicken let out a bawk and shifted back and forth in his grip. After a quick swab with an alcohol pad, Claypon carefully inserted the needle of a syringe into the vein and slowly drew out a few milliliters of blood. She withdrew the syringe but kept squeezing with her thumb.

“Got to keep pressing for a few seconds. Otherwise they can get really big, nasty bruises.” Still working with just one hand, she stuck the needle into one of the test tubes, which sucked in the blood. She inverted the tube a few times and then pushed it down into the ice.

“And that’s all there is to it.” She released the wing and started tidying up her used equipment. “Day after tomorrow, the lab will tell us if any of the blood samples contain antibodies to Eastern equine



encephalitis. If so, then it's off to the press conferences for you! Otherwise, though, in two weeks you and I come back here and do it all again."

Jack rolled the chicken right side up. She shifted her head from side to side to study her newly-upright surroundings. "The chickens don't get sick?"

"Nope. If a mosquito carrying EEE passes it to one of our birds, she'll simply develop antibodies to the virus. It's such a low-grade infection for them that nobody's ever reported a chicken showing any symptoms whatsoever."

She closed the lid of the cooler.

"Come on," said Claypon. "Time for your first blood-letting."

They traded Jack's bird for a black and white rooster. "Bigger veins than the girls," said Claypon. "And the boys are actually more cooperative."

Back at the pickup, she patiently guided him through the procedure. One test tube slipped from his gloved fingers to the ground, and his hand was trembling when it came time to jab in the needle. Finally, after seemingly unending minutes of fumbling, the syringe began to fill with blood.

The rooster, despite any supposed cooperativeness, appeared considerably less than pleased with Jack's performance.

As Jack pressed on the vein afterward, Claypon said, "Not bad, Dr. Graunt. Not bad at all."

"Thanks." His voice was glum.

She gave him a chuckle. "Oh, cheer up. This could be worse—suppose we were screening for CPNS instead of EEE, hey?"

He looked up, unsure what she meant.

"Anal swabs," she explained. "Ick."

Jack's second chicken went a bit better. Claypon handled the final two. As she was finishing, she asked, "Speaking of CPNS, what do you think of last night's article?"

"Huh? What article?"

"Ah. Clearly we're going to have to sign you up for the right newsfeeds." She closed the cooler and clipped shut the tackle box, then pointed to the pair of burlap sacks up on the bed. "Grab me one of those, will you? And bring the other one."

As they carried the bags over to the pen, she said, "You're going to like this study. These epidemiologists in India sent out questionnaires to a thousand CPNS cases."

"What, there's some question they haven't already been asked?"

The world's CPNS sufferers had been subjected to dozens of studies, hundreds of interviews, thousands of questionnaires. And yet, no risk factors for CPNS had been identified.

The condition—colonic/peripheral neuropathy syndrome—had popped up without warning three years ago, with some fifty thousand cases scattered all over the Earth. The first symptoms of the disease were due to a partial paralysis of the colon. Over time, the neurologic symptoms spread to limbs and trunk, with increasing tingling, numbness, and paralysis. Eventually the victims developed a thus-far untreatable inflammation of the retina, leading to blindness.

The cause of CPNS was unknown, and attempts to find any correlations—other health conditions, smoking, drugs, nutrition, ethnicity, economic status, education level, pets, cell-phone usage, favorite brand of shampoo—had so far come up empty.

But at least CPNS didn't seem to be infectious. Since the initial outbreak three years ago, no new cases had emerged.

Not that anyone felt tremendously reassured by the hiatus.

The only clue that had emerged was as mysterious and confusing as the disease itself. Sufferers differed from their neighbors in a single respect—their intestinal flora. The balance of bacterial populations in their gut was off—way off—with normally rare bacteria species supplanting the usual inhabitants.

Cause and effect were unclear, but the most popular theory speculated that the bacterial derangement came first, and that the neurological disruptions arose from changes in bacteria-produced chemical signals. Which suggested a long latency period between the bacterial changes and the development of clinical CPNS. Which in turn had led several labs to mass population screening of intestinal flora.

Jack didn't really mind the smells coming from the wood shavings at his feet. But he agreed with Claypon—blood draws beat anal swabs any day.

The chickens paced and clucked as Claypon hoisted her sack to fill the barrel of their feeder.

“So,” she said, “this new questionnaire asked the usual questions, but it went further back than usual—twenty years. And then the team combined the questionnaire results with deep web searches on the participants, collecting data on social networks, employment history, time spent online—anything they could dig out.”

She paused to show him how to pour the contents of his sack into the feeder without spilling grain and seeds all over the ground.

“So,” he asked, “what did they find?”

Claypon didn't answer for a moment. She collected the empty sack from him, then walked over to the pen's gate. “My tablet's in the truck. Easier to just show you.”

A few minutes later, back inside the pickup, she pulled her tablet from her backpack. After a few seconds of fiddling, she held it out to

him. “Okay, here’s a world map of where these cases lived three years ago.”

Jack glanced at the familiar image. “Looks like they got a good sample,” he said. Red dots were scattered all over the Earth, with only a few in clusters. Cities and rural areas were both represented, as were both hemispheres nearly from pole to pole.

“Now watch,” she said, “as we let it run backwards in time.”

She tapped a button, and as the date displayed up at the top ticked backward, some of the dots began moving. At first they seemed to wander randomly, reflecting the society Jack knew well—graduates seeking jobs, workers being relocated, families chasing better opportunities. But as the reversed clock continued, larger patterns emerged. He guessed that some must represent wars and natural disasters, though he hadn’t been paying enough attention to world news over the past few years to be sure of the specifics.

As he watched the dots roam the map, Jack thought of chickens wandering over a field. The patterns forming and breaking up were mesmerizing—

“Wait!” he said. “Can you roll it back?”

She handed him the tablet and pointed to the scrollbar beneath the map.

He panned time forward and back, staring at the red dots. Three years ago, and twenty years ago, they were scattered everywhere. But between 11 and 14 years in the past, all of the dots converged into a limited number of big clusters.

Those clusters were still sprinkled across the globe, so it wasn’t as if all of the cases shared a single exposure. But, he thought with growing excitement, there must be *something* common to all these locations....

Claypon took the tablet from him. “Hang on,” she said. “Let’s see what the group-mind has come up with since last night.”

She flipped to some blog. While she scrolled through comments, Jack pulled out his own phone and after a minute found himself a copy of the map. He ran the years up and down, trying to see the pattern behind the clusters. Big cities? Some, yes, but only a minority. Tropics vs. temperate zones? No. Maybe coastal vs. inland—

“Huh,” said Claypon.

“What?”

“Altitude. All of the clusters are above 1,000 meters.”

Jack pondered that. If it wasn't just a coincidence, then what could it mean? Reduced oxygen levels? Some wind-borne agent, maybe—or did winds work like that?

She interrupted his thoughts. “Here's something else. There's a big wedge of the Earth that's completely clear of cases—from the North Pole to the South Pole, sweeping from the middle of North America halfway out into the Pacific.”

What the heck? He glanced down at his phone to confirm that observation. Try as he might, though, Jack couldn't come up with even an unlikely explanation.

Then Claypon sucked in a quick breath. “Oh, my,” she whispered.

“What? What?”

But she just stared at her tablet, ignoring him. Finally, without moving anything but her arm, she handed him the tablet.

The comment at the screen's center read, *What if a big swarm of meteorites or something hit the Earth from the side? For several hours, but not long enough for that wedge of the planet to rotate into the path? Could explain the altitude correlation, too.*

Oh, my, thought Jack.

Claypon spoke, quiet and thoughtful. “How would meteorites affect intestinal bacteria?”

“Wouldn’t have to be meteorites,” said Jack. He was skimming down through the comments that, after a few minutes pause, had furiously followed the meteorite proposal. “Some kind of radiation, maybe. Or sub-atomic particles. Could even be microorganisms, or spores.”

“Too weird,” said Claypon, shaking her head. “But at least it would mean the rest of us can relax. Just a one-time freak event.”

Jack set the tablet onto the seat between them.

“Or the first wave of a bigger exposure.”

They stared at each other for a few seconds. Then she turned away and opened her door.

“Whatever,” she said. “In the meantime, you and I have some chickens to tend.”

He got out and joined her around by the side of the truck. “Now what?”

She handed him a couple of big plastic buckets, keeping another two for herself.

“Now we refill their water barrel.”

“What, from the scummy pond?”

She gestured off toward a different edge of the clearing. “Little creek down there. With you helping, it will only take us two trips.”

Scrambling down the muddy bank was kind of fun. But climbing back up, holding two heavy pails of water, made Jack envy Claypon’s clunky boots. Even crossing the field, now he felt every jagged rock through his thin soles.

The discomfort and physical exertion drove other thoughts from Jack’s mind. After emptying his last bucketful of water, he leaned against a fence pole as Claypon tipped each of her pails into the barrel. He watched the chickens scratch about their pen, and his thoughts drifted—first to the CPNS study, and then, as always, to his dissertation research.

After a moment he said, “Oh.” A few seconds later, he said it again.

Claypon, stacking the empty buckets, looked his way. “What is it?” She stood, frowning. “What’s wrong?”

He was staring at the clucking birds. “What do you suppose they think about us?”

“Who? The chickens?”

“They barely know we exist, do they? Their water comes from this barrel, their food from that machine. You and I, we’re just these creatures that swoop in now and then. We yank them out of their pen, poke at them for a few minutes, and then we’re gone.”

She gave him a sharp look. Then she said, “Come on,” and led him toward the gate.

She held it open for him. He stepped through, then turned to stare some more at the chickens.

“What happens,” he asked, “once we find EEE antibodies in one or two of these birds?”

She shrugged. “Then we’re done. We know that the virus has reached this region.”

“So we stop drawing their blood.”

“Well, sure. What’s the problem?”

He stared through the fence. The chickens seemed unaware of him.

“My dissertation—remember that one loose end? The convictional fad that stopped overnight, twelve years ago?”

She waited.

“UFOs. Not so much sightings, though. No—alien abductions. After a half century of reports, twelve years ago they simply *stopped*.”

“Wait,” she said. “What are you—”

“Alien abductions,” he repeated. “Physical exams.” Now he turned to look her in the eye. “Anal probes.”

After a few seconds, they both turned to peer in at the oblivious chickens.

He said, “They have no idea how good they’ve got it. Food and water just show up. The hen house keeps off the rain and keeps them warm at night.” He reached out and rattled the chain links. “This fence keeps out predators they don’t even know exist. They have no clue about the outside world, about how dangerous it really is.”

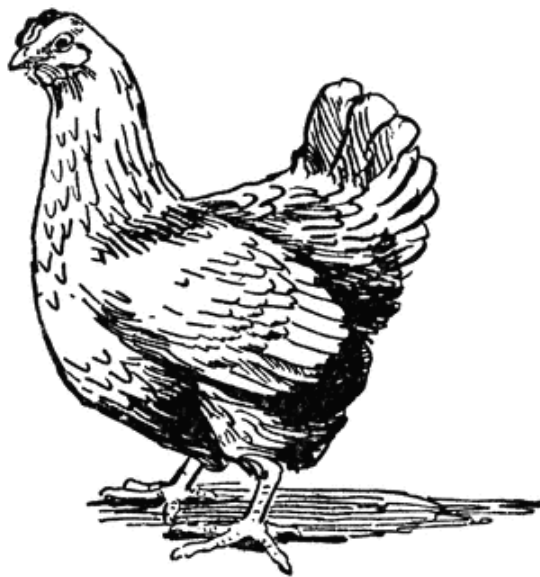
Claypon set her buckets onto the ground. She lifted the open padlock from where it hung on the fence.

He asked, “When their antibodies develop, and we stop drawing their blood, what next? What happens to the chickens?”

“Oh,” she said, “we’ll keep bringing them food and water, I guess. And maintaining their fence.”

She slid the padlock through its loop, and clicked it shut.

She added, “Until the project budget runs out, hey?”





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