

**MEND
AND
MAKE
DO**

**Andrew
Dana
Hudson**

Part of

WRITING THE FUTURE

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About the author

Andrew Dana Hudson is a speculative fiction writer living in Phoenix, Arizona, where he studies sustainability at Arizona State University. His story “Sunshine State” was featured in Everything Change, an anthology of climate fiction published by the Imagination and Climate Futures Initiative. Previously he worked for the Center for Care Innovations in Oakland, California and as a community journalist in St. Louis, Missouri and in Sikkim, India. Andrew seeks to tell stories about what a sustainable world might look like, and how we might get there if we make good choices.

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**The future is...
hot, wet and
dangerous.
But we can
also make it
just, resilient
and beautiful**

Alrigh, Alfie, spit in the cup then, lad.”

Poppy was good at this, I could tell. The boy hocked up a rope of saliva, which she caught deftly in her tin. Then she took Alfie by the chin and turned his head about, shining her light in his eyes and ears and down his throat. Once she let him go, he plopped back in his seat and returned to shovelling spoonfuls of honey into his tea.

“All’s well, Millie?” Poppy asked the mother, who nodded, eyes on her sewing.

“How’s everyone breathing?”

“Oh last week was bad, same as for everyone,” Millie said. She coughed, then looked at her son. “Cept this one. Swear, if he wasn’t so determined to rot his teeth out, I’d think I’d actually raised a healthy boy.”

“Saw the garden. That new chard comes up well, yeah? Any problems with yer stool this week?”

“No, miss, got it right by the door for you.” Millie tilted her head at the sample thermos.

“Right. Last thing then.” Poppy reluctantly gave me my cue.

“This’ll sting, Alfie,” I said, “but keep your head and I’ll give you a gummy, fair?” I pulled a sharp from my case and stuck it into the boy’s skinny bicep to draw a vial of blood. Poppy fastidiously cleaned and sealed the puncture.

Outside Poppy rounded on me. “That needle better be proper sterile. I get enough infections from boys scraping up in St. John’s skate park, which they won’t tear down. I won’t have you poking dirty holes in them as well.”

“Needles are sealed at the fabber in Swindon, same ones we use at the Trust labs,” I said.

This seemed to mollify her, but she still had to get the last word. “Right, well my uncle knows the MP from Drownham, so don’t think I can’t get at yer bosses if yer wrong.”

I pursed my lips, and we moved on to the next house on Witchford Road. Down the way I could see where pavement gave way to pontoon, as the road slipped into the brown waters of the flood-fens. You could still see the occasional rooftop poking out of the low sea, and in the distance stood the windmills they’d put up after The Wash levees broke.

I didn’t much like the Isle of Ely. It smelled of salt, marsh rot and the dead jellyfish that washed ashore. Hard to believe anything grew here in the sea-tainted soil, even Millie’s chard. The whole place felt like it was just one good drenching away from going totally under.

But the Eelies were another matter. There was a kettle on for us at every door on Poppy’s rounds, and they talked excitedly about a scheme to use the flood-fens for eel farming, as they had 500 years

ago. The Eelies had the strange grace of people who really had kept calm and carried on, even as rising seas had cut them off from the mainland, made their homes worthless, spilled sewage into their streets. The island's microbiome was still recovering from that last catastrophe, which I knew made Poppy's job much harder than that of the average NHS doc.

"Too much oil in those fry ups you like, George. I'm switching you to oats this week," she said to one patient. "Nevermind what yer mum did, yer not to skin those carrots. I don't even want you washing them, you hear?" she told another. And, "for God's sake, Neera, get out in the sun more. Yer pale as a ghost. I'll not waste vitamin D on someone with a porch that faces south."

Cultivating healthy guts wasn't glamorous medicine. It meant an endless tedium of sampling and culturing, then cajoling people to make finicky dietary changes based on the results. Even with modern probiotics, it was more art than science.

I told Poppy as much as I shadowed her rounds. I meant to flatter her, but of course I bungled it, and she took offense.

"You think I'm just balancing humours, eh? 'Take a sniff of this mercury, mate, that'll mend you right up.' That's what you think I do?"

"Not at all!" I protested. "I think your work is really complicated, and, and... difficult."

“Bloody right it is. And it’s not made easier by you slowing me down. If the Trust wanted to help, they wouldn’t saddle us with these nutty research schemes. They’d hire more of me or send someone to rightsize our energy rations. I got families in the commons that are drinking dirty water in the winter. The new primary school lessons are all on video, but the algorithm doesn’t take that into account, so they skimp on filtering to save juice for their screens.”

This was a common complaint, but hardly my department. I was only on Ely to do an environmental antibody survey, and I didn’t know a thing about the clunky bureaucracy that administered the power grid, which had nothing to do with the National Trust. So I just said I’d pass her comments on and did my best to avoid raising Poppy’s ire for the rest of the day.

Come sundown we each racked up our samples and peddled up the hill and across town to the Princess of Wales complex, where I’d claimed some workspace. It was a grim place, even for Ely. Used to be a hospital, they told me, before antibiotic resistance made penning all the sick up together an untenable system – if tenable it ever was. Post-frailty, NHS had nominally split the complex with the Trust, which had wanted an outpost from which to study biomic effects of sea-level rise. ‘Course like everything that project had taken an extra decade to get off the ground. By the time I arrived, Poppy and her crew had turned

the empty buildings into their unofficial fermentation facility. They weren't happy to have me elbowing in on their squatter's rights.

Still I'd made them clear some shelves for me in the groundfridge – where I now deposited most of my samples – and a desk to set up my lab. A bee buzzed by my ear as I sat down. Even in a place that smelled as bad as Ely, the NHS was strict about its open air policies.

I pulled a drop of blood (Alfie's), and asked the lab to put it through immune response paces overnight. I did the same with four other samples. There wasn't much point, since we'd need reams more data to learn anything meaningful, but I hadn't slogged about with Poppy all day to not at least take a peek.

Next morning Poppy picked me up from my lodgings, an ancient bed and breakfast by the even-more-ancient Ely Cathedral. We cycled up Prickwillow Road to the public towers overlooking the Roswell Pits. They were gorgeous granite buildings clad in iridescent solar panels, in the utopian style of the '30s – as our first patient was keen to tell me.

“Let the seas keep rising, I say,” the nonagenarian exclaimed, waving his arms while Poppy tried to take his pulse. “These towers are rated to last 600 years!”

“You tell her, Fred,” Poppy said, rolling her eyes. “Don't build 'em like they used to, eh?”

“Indeed no,” Fred primmed. “They build them well enough now, but without ambition or grandiosity. Not like when I was your age. Of course, we had Jezza then...”

He looked through me then, to distant days, and seemed to slump a little.

“You going to the mingler, Fred?” I asked, hoping to raise his spirits. I’d heard these NHS-sponsored socials were big on Ely. Ostensibly there were health benefits to hanging around people with different and complementary immune fauna, but throwing exclusive parties also helped motivate the Eelies to give the NHS their faeces every week.

“He better be,” Poppy said. “We finalize invites based on this week’s cultures, but I can tell you right now he’ll be on the list. Our Fred has skipped the last four!”

“The minglers just aren’t for me, dear.” Fred looked guilty, and Poppy harrumphed.

“It’s in the cathedral, right?” I asked. “I’m new in town and would love to learn about the building. Maybe you would be my date?”

He perked up. “Our cathedral does have a fascinating history. I suppose I could...”

When we finished securing Fred’s word he would show at the mingler, Poppy looked me over, as if for the first time. She didn’t say anything, but she refrained from snapping at me the rest of the rounds. At day’s

end, when we had racked up our cases of blood, spit and stool, Poppy stopped me before I turned my bicycle north.

“Not that way,” she said. “Pub.”

The Cutter wasn't the oldest pub in town, but it had that defiant quality I admired in the Eelies. Propped up on stilts right at the edge of where the River Great Ouse used to be, it was already packed with boat people drifted in from the flood-fens, who enjoyed the now-ironic nautical theme. Poppy knew everyone, and glad-handed her way to the bar.

“Okay, tell me about yer project,” she said, setting two pints of sour kombi down on our booth table.

“Well, I don't know if you read the wikis...” Poppy glared. I started over.

“They've – we've found a new class of pseudo-phytoncides that have complex immune effects. We knew plants produced them to fight off predatory organisms, but we now think they flow pretty dynamically through the biome. So my tests are part of an effort to get a bead on that, see how it links with the asthma question.”

“The asthma question?” Poppy seemed surprised.

“Think about it. Smog is gone. Those Californian drones finally got Europe's wildfires under control. By some metrics, air is cleaner than it's been in centuries. But respiratory illness is still on the rise. Why?”

“More heat. Less oxygen. More pollen ‘cause of shorter winters. Dust blowing up from the equator. General frailty. It’s obvious...” Poppy stopped then. “Isn’t it?”

“We’re not so sure.” I swirled my kombucha. It was strong stuff. “There’s a lot of lumpiness to the data. Countries further south or in The Thaw, where the weather has changed the most, don’t show the same impacts as places like Ely. In fact, it’s worse here.”

I saw Poppy stiffen, so I held up my hand. “Nothing to do with your work. That’s a trend we see all over the temperate New Coasts. So we have to look at deeper effects of searise, particularly on flora. Hence Ely.”

Poppy considered, gulping her pint. She burped. “Sure this isn’t some goose chase to distract from the Trust’s overly-optimistic drawdown projections?”

I didn’t want to get sidetracked by politics, so I dodged the question. “You know as well as anyone how HVAC and antibiotics gave medicine some real bad ideas about how the body worked. Every few decades we discover a new layer of how our health connects to bigger systems. Germ theory. Allergens. Gut and mouth fauna. Japanese tree bathing. It’s pointing to something. An ecological theory of health, maybe. You spend all day practically prescribing dirt, is it that much of a leap to take an interest in what grows in that dirt as well?” I threw back my drink and, for the first time, glared back at Poppy. “Anyway, that’s my project.”

Poppy grinned then, and my jaw unclenched.
“Thanks much for that rousing speech, missy. I surrender. You good-cop me with the Freds out there, I won’t give you trouble.”

“Deal,” I said.

When we got back to Princess of Wales, I showed Poppy what my lab had come up with. The projector needed to map the stained wall, and I had to shoo away a couple bees before it would take.

“What am I looking at?” She squinted. “Is this an LDL/HDL sorta thing?”

“It’s more subtle than that,” I said, reformatting the visualization to something less technical. “Our current theory is that it’s about balancing four, maybe five factors, but there are multiple nodes of ‘good’ balance all across the chart space. Bit like Lagrange points, if you follow the counter-Kessler satellite cleanup.”

“How do you do the balancing?” Poppy poked the data into a different shape.

“That’s what we want to find out. You can’t just do supplements – the pathways of exposure matter a lot. And not just to the right flora, but to flora undergoing the right immune responses of their own. So soil salinity, pollinator shifts, diseases, floods sloshing the microbiome – all these can throw systems off-kilter for years.”

Poppy nodded. I was gratified she was taking an interest. The Trust worried that NHS rank-and-file would

be resistant to findings that might radically expand their scope of work – or displace their authority.

“Who’s this, then?” Poppy pointed at a lonely dot and swiped its dataset into the foreground.

“That’s,” I checked, “Alfie, from Witchford Road – ” I stopped. I hadn’t yet looked at the results. Alfie’s chart was good. Really good. I pulled up the other four samples.

They huddled together in a dank corner of the graph, like most of the flood-fens predictions I’d seen. “Poppy, is Alfie special?”

“Millie’s boy? He’s a bit dim, honestly. Always skinning his knees and picking up jellies at the shore. Had to nurse him through some bad infections when he was a toddler. Quieted down lately, though, and he’s been healthy as a house. I figured all that running around earned him a strong set of lungs. But sounds like you think there’s more to it...”

Poppy let me requisition a few NHS labs, and I dropped out all the samples from my first two days to run overnight. It was tedious work, and I was spent and hungry when I pedalled back into town. I’d missed dinner, but the landlord had left me a covered bowl of soup. I ate it cold – exhausted, but giddy to be in Poppy’s good graces.

Next morning I went back to the compound early. Sure enough, compared to other Eelies, Alfie was

an outlier. When Poppy arrived, I told her I wanted to return to Witchford Road. She grumbled at being thrown off her rounds, but I knew she was intrigued.

Millie was surprised to see us so early, and so off schedule. “Nothing to fret, dear,” Poppy said, “Just want a chat with yer lad.”

Alfie plodded into the kitchen, and Millie set about fixing breakfast – cricket toast, which Alfie smeared with great gobs of honey. We spent the next hour gently interrogating the boy about where he played, if he ate anything unusual. I took notes, but nothing stood out. Defeated, we trudged back to Princess of Wales to pore over the data some more.

“If these phyto-things are so important, why haven’t we heard of them before?” Poppy complained.

“Complex systems are hard,” I offered. “They usually take many looks by many sets of eyes to figure out, and most of the time we have no way of knowing if our understanding is complete. It took centuries for biologists to figure out that lichens were three-player symbioses. Now we’re learning that most organisms are really ecosystems themselves. Guts and brains connect to multiple communities of bacteria. Plants share microbiota with soil and pollinators – ”

A bee buzzed in my face, and I started. I felt Poppy’s eyes on me, then on the desk where the bee had set down.

“How do pollinators feel about your phyto-things?” she asked.

Millie was doubly surprised to see us back again, but she hustled us in and opened up the pantry where the family kept liter-sized jars of the golden goo.

“Boys like their sweets, but never seen one take to honey like my Alfie,” Millie said. “The cathedral apiarist helped us set up a hive in the backyard.”

The apiarist turned out to be my new boyfriend – elderly Fred. We found him on the cathedral’s east lawn, bossing around a harried twenty-something enbie.

“Now try to get the whole swarm in the bucket in two or three good shakes,” Fred shouted, as his assistant donned a beekeeper’s hood. We watched them loose the mass of bees from a tree branch and deposit it into a cylindrical hive.

“Of course I know Alfie,” Fred told us. “Sent Millie a jar of my best when he was sick a few years ago, right when the bees returned post-flood. He’s been coming by ever since. Expect he’ll make a good helper to Jude there, soon enough. We’ll need the hands with the comeback these chaps have been making.”

“Fred, I could kiss you!” Poppy said. I tried not to be jealous.

It took a few days to test Alfie’s bees, but the correlation was enough to bring to the Trust. Some health benefits of hyperlocal honey were known, but it

might take years to find out why the honey had such a profound impact on Alfie's pseudo-phytoncide balances. Was it sheer volume? Proximity? Or perhaps something about the timing – an inflection in his immune system from exposure during his years of sickness.

Poppy wasn't going to wait to learn for sure. She wanted to be ready to get hives for every house on the isle. She rallied the NHS docs to bring the compound bees under proper care. By the time I left Ely, they were building an apiary.

"We've got the works for fermentation," Poppy said, walking me to the Cambridge ferry. It was raining, and we huddled close under an umbrella. "Might make some mead. The Cutter would serve it, I figure."

"There'll be more to it than just honey," I said. "It's the conditions of the flora too, and the whole ecosystem."

"Sure, I know that. I'll plant and weed this whole island if I have to. My Eelies been through enough. They deserve at least to live healthy."

Poppy pecked me on the cheek as I stepped onto the ferry. Then she turned and walked back through the rain, towards her fragile garden.

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