**<Chapter 1 A Picture of the Sky, With Nothing in It>**

A picture lit up in my mind’s eye.

Years ago, so many that it felt like someone else’s life, I stood in the yard behind my parents’ house, looking at the sky. At the air itself, I think. Its invisible currents, its white glare.

I was always grateful when I saw that scene again, glad I could remember it as it was, as a beautiful image, a memory hung on a nail in my imagination. The summer air glowed in my thoughts. Back then I wasn’t Samuel, just little Sam.

Until recently I haven’t thought about the enormous distance from where I am to that unremarkable sky. I used to take it for granted I was once a small boy, that one in particular. Now it sounds strange to say I stood there, saw that sky. It was too long ago, and I no longer know who that boy was. I realize, of course, that this problem is ridiculous, because the child who stared at the vaguely illuminated sky wasn’t anyone but me, I mean he wasn’t anyone else, but the more I attend to that fact the less plausible it seems. Once upon a time I was a baby, and later on a boy, and so on, up to the acquisition of hormones, and after that I’ve been pretty much what I still am. The difficulty is that Sam wasn’t a small version of me, with my ideas and my body in childish form. He was something different. He wasn’t a child, exactly: he was the feeling of that particular hazy sky. He was the looking itself, the amazement.

I glanced again, in my mind’s eye, and saw the spindly trees, their leaves pestered by caterpillars and dried by blight. That afternoon minutes passed and nothing happened. Branches scarcely moved in the feeble summer breeze. The sky was flat white like paper. Birds signed their names on the heavens, looping and diving.

Little Sam was out there in the back yard waiting for John, but as usual John was still inside, chatting with Sam’s mother. How did they get along so well, when anyone could see she was as abrasive as a shaking box of broken glass? She was starved for conversation, and she loved arguing with John because even when she said things that were prejudiced or just plain wrong, he wouldn’t give up. Sam preferred being outdoors, where even the most ferocious disputes in the house didn’t sound any louder than a bird reshuffling its wings.

It was nearly the middle of summer, but the winter chill just wouldn’t melt away. Cold huddled in thickets, nestled with the chicory and burdocks. Cold seeped out of clefts in stone walls where last year’s spider webs trembled in little caves. The earth was a great reservoir of cold. Sam felt the stale damp under his bare feet. It seemed to him the sun was too small, as if it had wandered off in the heavens. If you saw a cloud with a touch of gray in it a wind might come up, and it would rain big droplets.

The sky back then was powdery and soft like linen.  Trees were sewn onto it.

In the yard behind his parents’ house in Watkins Glen, New York, little Sam held his palms up toward the sun, but he could hardly feel its warmth.

At the desk in my apartment in Guelph, Ontario, I also hold my hands up, but there isn’t anything to feel. It is mid-October, and the building management has turned on the heat. A vent in the corner of the room is exhaling a single endless breath that smells of toast.

I remember where Sam was standing, off to one side of the yard, under a mulberry tree. It was a young tree, but it made a preposterous amount of fruit, so much that the birds and squirrels couldn’t eat it all. When it was dark raccoons climbed up and ate what they could reach, and yet in the morning the tree always looked full of berries. The grass beneath was stained lipstick red.

The air in Watkins Glen was heavy with the smell of vegetation, mingled with the dried mud and methane odor of the pond at the end of the yard, where a miniature forest of reeds shifted back and forth.

Trees at the pond’s edge were especially unhealthy, half-drowned by the swampy land, thinned by infestations, draped in suffocating vines. The air reverberated with the belching of frogs and the whining of cicadas. When a frog jumped the water rippled frantically and then settled into greasy flatness.

Little Sam had almost no memories, because he was young, but as he stood there waiting for John he remembered that he used to wade in the pond. Sometimes the water was gelatinous with clouds of frogs’ eggs. They formed frothy balls the size of Sam’s mother’s head. He’d picked them up once and squeezed them. They broke apart like Jell-O.

Little Sam made a fist, remembering how he’d squeezed a lump of frog’s eggs.

I tighten my fingers a little, mimicking Sam recalling his adventures from a year or two before.

He also remembered how he’d flinched from the bites of water beetles and deerflies. He and John had waded into the deep end where the mud was black and oily. They’d come out with their feet trailing smooth green algae, smelling of whatever had died and sunk to the bottom.

That was little Sam’s world: mud-choked pond, stunted trees, paper sky. Immobile in a summer chill.

What was it like, that life? The world glowed. Beetles gleamed in the grass, fields soaked in yellow light. Clouds whipped through the sky, the air was sharp and scratched your face like cats. Whatever was, was new: each mosquito bite, every oddly patterned moth dead on a windowsill, each serrated leaf bitten by a caterpillar with impossibly soft fur. Little Sam had no idea what happens when the world becomes old. To him the past was a blur of Christmases. The future was wherever he wanted to go play. If children had even the slightest idea of the sagging cobwebs of memories, the exhausting meandering paths of life, the stale regrets and rancid guilt, the weight of things that haven’t gone right moldering in the mind like piles of papers ruined by a flood, sodden, heavy, the pages stuck together so they tear when you try to read them: if children could be shown what they’d feel like later in life, they’d just give up. Little Sam would have sat down and cried in fright.

He didn’t hope for anything different, because he didn’t hope. If you’d asked him what he hoped for, he probably would have said, A cheeseburger for dinner. If he could have understood the question about hope, he would have said he wanted life to keep going just as it was. The pond, the yard, things as they were meant to be.

I can imagine going back and visiting him. Little Sam wouldn’t know me, it would be as if he was meeting a friendly stranger. I’d lean down and put my hand on his shoulder in the condescending way some adults do, and I’d say,

— Hey, Sam, what do you want to do when you grow up?

And he’d give me the sort of blank stare kids give adults when they know something’s expected of them, but they don’t quite get what it is. He’d be thinking of escaping from the creepy man, who’d somehow remind him of his father, so he’d think of something far away.

— I want to go to Mars.

— Well, ha, ha, I’d reply, that’s great, but listen to this. When you grow up, you’re going to be a scientist.

And Sam would say, Oh, meaning, Can I go now?

— Actually, I’d say, crouching down to his level, this is going to sound weird, but you’re going to be a water inspector. You’re going to study amoebas and bacteria that contaminate drinking water. That’s right. And people will pay you. Not much, but they’ll pay. Why? Well, that’s just the way the world is, that’ll be your job. All day long you will study amoebas in drinking water. And you’re going to move to a town with a funny name, Guelph. Funny, right? Why? I don’t know, it’s just a funny name. Why do you have to move? Oh, because you’re going to need a job. You’ll like it, more or less. You’ll be happy, sort of. Well, adults are never really happy, if you mean happy happy, but you’ll be okay, pretty much. What do you mean, what then? Nothing. About halfway along the road of your life you’ll start worrying. In fact you will get very worried. Oh, and you’ll get married, of course. Do you have a girlfriend? No? You will. You’ll get married, but it won’t work out, or at least not perfectly, but what isperfect, anyway? Ha, ha, ha. Your marriage won’t work out, sorry. What do you mean, then what? Nothing. I guess you’ll die. That’s how people’s lives go. People get older and then they die. Same with you.

Then he’d start crying, and I’d feel bad for making my own self feel bad. I’d tell him I was sorry. I’d pat him on the head, mainly because I’d want to feel what my hair was like back then. He’d sob and then sniffle. I’d tell him to go off and play somewhere else.

The distance between me and little Sam is inconceivable, impossibly far, more than a lifetime. A person’s childhood can be farther away than we are from ancient Egypt. You can study Egypt: lots of people know about it. You can go there and see what’s left. Little Sam is more distant than that. There is no way to visit him, no mention of him on the internet, nothing in libraries. No books called *Little Sam Under the Mulberry: What He Was Really Thinking.* My mother didn’t take photographs, so there are no images of him that I can cherish, no videos of those years that I can use to help along my faltering memory. He just lived his childish life, and when he was done living it he forgot most of it, and then he forgot himself, and became me.

How strange I care so much about that day. After all, nothing really took place, and it happened to a boy I hardly remember. The sky wasn’t a revelation like Joan of Arc had in that field or Saul had on that road or St. Eustace had in that forest. Sam wasn’t especially amazed. It’s more like he was between thoughts, the way kids often are. It wasn’t exciting like my first date with Adela, or the day Fina was born. It was just a couple of minutes in an afternoon. John and I were going to go up to the old pine tree. It shouldn’t have been memorable.

It seems unfair that I was at my happiest during a brief moment I spent looking at the sky. It’s almost pathological, or at least pathetic, that recalling those minutes is still a solace. What does it mean to live your life in the shadow of one event, if that so-called event is just a quiet interval between other things you’ve long forgotten? Some people are shaped by brutal memories from their childhood: they were abused, or they witnessed awful things. People struggle their entire lives to make sense of hammering memories like those. Pain and anger batter them down, pound their lives into new shapes. My memory is a small window that opened in my world: I leaned out and looked, and didn’t see anything in particular, just the world as it actually is, the air and light in silence.

That day in the back yard was a couple of years after my father died, so it is possible it’s a disguised memory of a trauma. Maybe I wanted my life to be as simple as a clear sky. But that doesn’t seem right: the memory isn’t unhappy or lonely. My father died so suddenly it was as if he’d just disappeared. In later years I thought about the way his death didn’t leave a scar. The family healed without a trace, like when you get a small cut on your hand. You forget it for a while, and when you look at your hand a couple weeks later, the skin is perfect. Or like when a car slips off a road in the winter and crashes into a frozen lake, breaking the ice. In an instant it is gone, and later that night the ice heals itself, and then it snows, concealing the sutures in the ice, and by morning there is no trace.

Of course an analyst would never believe me. He’d want to know what I was repressing. How I could possibly think that a placid experience of nothing, because after all the sky is pretty much a definition of nothing, could be the compass for my entire life? Wasn’t the emptiness of the sky an emblem for the hollow left by my father’s death?

— Well, I’d say, maybe.

— Okay, he’d say, let’s consider the possibility that something happened that afternoon. It is not impossible you were molested, these things happen to many people. It is not impossible you molested someone else. Children are capable of astonishing acts.

— Hmm, I’d say, I hope not.

— Your memory indicates something is missing. Let’s think about the possibility you witnessed something. Perhaps it took place near where you were standing. You don’t want to see it, your mind is shielding you from it. Did something happen behind the mulberry tree? You keep mentioning that tree. And the raccoons crawling over it, a remarkable and unsettling image. Did you know Freud had a patient who saw a tree full of wolves? Where are you going? You have ten more minutes.

— Look, I’d say, isn’t it possible that a person’s life can be illuminated by a simple experience, even if it is suspiciously meaningless? I was a little boy, I looked at the sky, I really felt what I saw, it’s never happened since, and I really doubt it happens to many people, especially to you, you’re as cold as a mackerel.

— Anything is possible, the analyst would say, adjusting his glasses in that annoying way that implies you’ve gone out of focus. But tell me, Mr. Emmer, since you are leaving our session early, and I suspect I may not see you again: tell me, do you think a life can really be lived around a fading image of a featureless sky? What kind of a life would that be?

All I know with certainty is that when I sit still and hold the images in my mind’s eye, they shine steadily back at me.

On the other side of the house, at the top of a steep hill, there was a pine forest. The light up there was serrated, combed by sharp pine needles. Breezes made sifting sounds as they passed through the treetops. The place smelled vinegary and airless. Sam loved the birds that lived there: shrieking blue jays, crows that rasped and ratcheted. Sunlight fell fractured on the crackling forest floor. Animals coughed and shuffled in the undergrowth. Sores in the old pines wept white amber decorated with ants.

If John would only come out, he and Sam would go there, to their secret place. They had found the tallest tree in the forest, a pine the size of a sequoia. Its base was as big around as Sam’s mother’s bedroom, and it had no branches anywhere near the ground. Sam and John and Mark and Billy had figured out how to climb it. They’d nailed planks onto the trunk to make a ladder up to the lowest branch. Their ladder was nearly complete, and the next time they went, they were going to climb up into the branches and all the way to the top of the tree.

Behind him Sam could see two windows in the house. In one he glimpsed his mother beyond a half-drawn curtain. She was sitting at her desk. Then he saw John pacing. The room was gray with cigarette smoke. It was a dark room, even in mid-afternoon, because it was shaded by the trees that clustered around the house and by grape vines that hung from the eaves. The sun glowed incandescent white on the grape leaves. The windows glistened dusty silver where the sun hit them. Sam’s mother jumped up. Perhaps she’d won a point.

Sam loved the woods, the pond, and the yard, but especially he loved the mulberry tree, partly because it produced so many berries, but mainly he loved it for no particular reason, because he was little Sam after all, only ten years old, if that, and not given to the sort of reflections that so entangle me that I sometimes wish, well no, I continuously hope that I could just forget my doubts and second thoughts and third thoughts and qualifications and tortured revisions and incremental reservations and pointless revisitings and endless hopeful but entirely ineffectual attempts to think at least fairly clearly about things that no sensible person would ever even try to understand, like for example how a person can drift so far from his memories that he almost disbelieves he is the person who had those memories—I wish I could just forget those sorts of things and see the world directly, like I did back then.

Little Sam felt the mad buzzing of a deerfly caught in his hair. He batted at it so he wouldn’t be bitten.

I try the same gesture. It makes me self-conscious even though there is no one else in the apartment.

Thinking of all this, I feel a strange vertigo, as if I have actually finished my life, or the best part of it, long ago. As if everything after those minutes under the mulberry is a remnant, a long period devoted to watching the horizon for the incoming clouds of old age. Maybe that’s what I was doing in the back yard that day, without knowing it: scanning for signs that life would change, time would begin moving forward and I’d be pushed into the future.

And here I am in that future. The wonderful life little Sam once lived has grown into something intricate like the multicolored mould that effloresces on a peach, overwhelming it, turning it into a soft forest of fungi. The peach becomes repulsive and inedible, but at the same time it acquires a fascinating and nearly unintelligible biological complexity. Each day it grows away from health and toward something more difficult.

I have a hollow feeling, as if little Sam was my life, and it ended, and I am some unpleasant residue. That can’t be a healthy idea: best not to think that way again, at least not too often.

As little Sam watched, a cloud with a touch of gray came into view over the rangy trees. Why couldn’t John just come out? Sam wriggled his toes in the fallen mulberries, turning them into red lipstick juice.

No one, he thought, no one but me sees that sky.

No one, I think, no one is left to remember that time, so far away, so long ago.1

**<Chapter 2 The Boötes Void>**

That is my dream, which I dream whenever I can. That morning I had to stop, because it was time to go to work.

As I walked down Cather I wondered how it’d gotten to the point where I spent a certain amount of time, nearly every morning, planning what to say to Rosie. She is the Water Department’s receptionist and administrator. We talk for a minute when I come in, but it isn’t as if we have any real connection. I usually have things to do, like avoiding Agathe. As a result Rosie and I mainly talk about where she’s from (Oustic, which isn’t much more than a crossroads out in Ontario farm country), whether she’s happy in Guelph (yes, it’s nice to get away from the farm, which has issues), and what she thinks of Agathe (on that she has no opinion) or Catherine (same). Part of the reason I haven’t spent more time talking to Rosie is that I’m concerned about her health but I don’t know how to bring it up. There just isn’t a nice way to ask if it’s okay to have skin that looks like pale pink wax.

It started earlier this year, when I caught her looking at me a couple of times during the monthly meetings. She had a tired or absent expression that I first interpreted as boredom, but that I later decided must be meaningful, based on the number of times she looked at me (once in the June meeting, twice in each of the May, July, and August meetings, and three times in the September meeting), and on the fact that she always looked away instantly, which could be interpreted as a normal person would, namely that she hadn’t meant to be staring at me and signaled her mistake by looking away instead of smiling or winking or licking her lips or whatever else I wished she’d do, but I chose to interpret it as shyness, because when I stopped in the office later to get the mail or do some copying, I’d say something like, “God, François’s report was boring, I thought he’d never shut up,” or, “Jesus, did you see those red braces he was wearing? Does he think we’re gangsters?” and she’d nod or smile, probably because she couldn’t be seen to take sides, but possibly because she is shy.

Also there was the way we talked about weather. I’d say: “Environment Canada says the hot spot in Ontario is Old Cut,” which is down by Lake Erie, and she’d say, “The hot spot’s been moving, last week it was South Buxton.” “So it’s getting closer,” I’d say, and she’d say, “We’d better look out.” That kind of thing. It wasn’t anything, probably, but it wasn’t nothing, either. I think we both enjoyed it.

In June I decided that Rosie’s ten glances over the course of five months, which were, after all, a glance every two weeks, surely above average for someone who is supposedly just a co-worker and has no particular interest in other co-workers, meant she does have an interest in me, perhaps a longstanding fascination, maybe even a secret obsession. By July I had decided she has lovely eyes, even though I realized they are more hazy than soulful. By August I realized she has an attractive pale complexion, even though I was also pretty sure she has a vitamin deficiency.

After the September meeting I was convinced she is beautiful, even though it’s likely she’s skating on a couple of hundred calories a day, and that what I think of as a light graceful walk is more a matter of not putting percussive pressure on her joints, because she probably has osteopoenia if not osteoporosis.

All this was on my mind that Monday in mid-October as I walked, and twice stumbled, down Cather past the Econo-Lodge and the Texaco and through the dank passage under the highway.

After the underpass I turn down Lorck, a quiet residential street that leads to the Water Management facility. The side streets in Guelph are a lot like the ones in Watkins Glen: houses are kept up, bravely or barely. Lawns are mowed, or not. Lorck has a settled-in semi-poverty. No one on this side of town is about to put in a glass conservatory or a double-car garage. The street itself sags, as if it’s a soft place in the Earth. The dip begins with a smooth declivity a couple of houses from the turn, levels at the bottom four blocks later, and rises again before the street crosses Waterworks Place, forming a protracted gentle slope down and up that I once compared in my mind to the catenary arc of a high-tension wire strung across a great distance, like the ones they used to put up across Niagara Falls. I imagined I was pedaling my bicycle with its special grooved tireless wheels hundreds of feet above the abyss and not minding it at all, only pretending to be nervous, and even my pretending done without thinking—a wobble here, a dramatic pause there, all done by rote—because my mind was on my taxes or my daughter’s dodgy boyfriend. The declivity made that real enough except that the sidewalk doesn’t vibrate, and there is no way to fall from it except of course if I trip, and it was only because I stumbled again that I even remembered this comparison: a fact I noted with great happiness, because it meant that I know the way to work so well that it no longer registers in my conscious mind, and like other absences of meaning, it is therefore an enormous comfort.

That fall I had grown into a nearly perfect unawareness of my own life. Adela liked to say I only slenderly understand myself. “You only ever slenderly understand yourself,” that’s what she said. It was line she got from Shakespeare, and it was very annoying. I am intent on understanding myself well enough to avoid discoveries that might upset me. The realization that I have almost become unaware of the entire route between my apartment and the Water Management facility is a source of pleasure, a victory over stubbornly resilient moments of self-awareness. At the same time it is the kind of insight I could do without, because as soon as I realized it, I lost my train of thought and the sidewalk repopulated itself with pedestrians—I was walking behind a woman pushing a bright yellow stroller hung with blue and red plastic baby toys—and with cars that seemed to slow down to see my unusual way of walking—I may have shown some residual signs of riding my imaginary bicycle—and so I lost my chance to think about why I get such pleasure from realizing that increasingly large parts of my life, like this walk to work, no longer mean anything to me.

The eight blocks are a sunken area in my consciousness, a Great Concavity. My life is full of sumps like this, places I have stopped thinking about, people who’ve fallen out of my awareness. The largest of them is the one that separates my life here from whatever it was when I was very young, standing by the pond or running in the woods. That absence is like the great emptiness in the constellation Boötes that my mother told me about, a region point zero two percent as wide as the entire known universe, with nothing in it, and no reason for there to be nothing.

— Just a few stray stars, she said, out there in the emptiness without any galaxies nearby. Darker and colder than the rest of space. Far more lonely.

It was an alarming thing for a boy to hear.

— Imagine, she said. No stars in your sky. Your sun by itself out in the universe.

I must have looked frightened.

— But don’t worry, she said. That void isn’t the only one, there’s the Corona Borealis Void, the Microscopium Void, the Capricornus Void, the universe is full of them, they’re all growing and merging, like bubbles in your bath, soon there will be almost nothing left, everything will be empty like one big bubble, so don’t worry.

That’s the way she talked. She taught me to love vast repositories of emptiness and cold. It was disconcerting at the time, but when I think of the voids in my own life that way, it is pleasant.

As I walked along the level bottom of the Great Concavity I imagined myself traveling away from the traces of light and warmth that are so thinly distributed through the darkness of space and out into one of the great voids, the galaxies clearing away from the sky, everything getting incrementally blacker, edging toward an absolute zero of cold.

It’s odd, I thought, how I haven’t noticed how few friends I have until recently. Josh and François work over in the Mayor’s office, so they must have dozens of friends. I’ve been to François’s house for dinner maybe five times, at most, over all the years I’ve been in Guelph, and each time there were a dozen people I didn’t recognize. He’d have to know all the people in the City Council, that’s almost thirty people, and the staff, another half-dozen, and of course people in the other departments, like Environment, Solid Waste, Transport, all the others. He must know at least a hundred people, or two hundred, or even three hundred, some impossible number, a number I could never manage, because I am bad at names. At least that’s what I tell people when I forget who they are, but actually I am bad at names because I don’t care enough to remember them.

The truth is I don’t really like most people, or maybe I just don’t like people, period, but it is hard to know if that can really be true. I do like a few people, and I even love a couple of them, but it is quite possible, as Catherine says, that I prefer things that aren’t human. I spend my work days looking at amoebas and bacteria in our drinking water, so naturally I’ve grown to like them. It’s even possible that I prefer things that aren’t living, like voids, for example, or stretches of the sidewalk that seem to be slumped into the earth.

Adela made friends in the television station where she used to work, and she got to know people in the pharmaceutical company, in her yoga classes, in her English classes. There were neighbors down the hall we hardly saw, except when we happened to ride on the elevator with them, and she got to know them too. There was that guy who tutored her in English, those women from her church, the people she met in the Slovakian Cultural Center in Toronto that time, whom she thought were so great and wonderful. They were over to dinner at least twice but I wouldn’t recognize them in the street. Now that she’s back in Bratislava she must have even more friends, along with her big incomprehensible family. When I went there four years ago, people were always coming in and out: friends of Adela’s two sisters and her brother Jan, people she knew from high school, friends of her mother’s. Adela is social in a way I will never be, and that may be one of the reasons she has drifted back across the Atlantic. That, and the worrying attraction that all the Sklenar women seem to feel for their mother’s house. Each of the sisters in turn has tried to leave and ended up returning. Adela lasted the longest, nearly two decades.

So the friends I have, who are they, really? Not Agathe, anyway. She is just a colleague, so I have to tolerate her. Catherine is a friend, because we meet every week for lunch. François, not anymore. I don’t really know Rosie yet, although I’d miss her if she wasn’t in the office each morning when I get in. You could put everything she’s said to me in a little book called *Really Friendly and Even Potentially Suggestive Things to Say About the Weather.*

The others are just co-workers. I am companionable in the usual insincere way when I pass them in the hallway or when we stand together in the kitchenette, but they could disappear at any time: to new jobs, retirement homes, or hospitals. All the conversations I’ve ever had with them could be put in an even thinner book called *Trivial Things to Say When You Meet People You Don’t Care About.*

It sounds pathetic to say I don’t have close friends, but is it? Not everyone’s life is as perfect as my brother Tee’s. Over the years he’s mentioned a dozen or more very close friends, that’s what he calls them, and then of course he also has his wife, his son, and his money, he is very good friends with that, and his house, with its many bathrooms with medicine cabinets all carefully emptied of anything revealing. I wonder how he has time to keep up with his very close friends. He shows me pictures of them clinking glasses with branded cocktail umbrellas, posing on motorboats in glaring sunshine, dangling their feet over waterfalls. He’s known them for years, he says. We do everything together, he says. He sees them at Christmas, New Year’s, at the World Cup, on safari, at Shanghai Disneyland, at Ferrari World Abu Dhabi, at Amanjiwo Borobudur. In the pictures they look abundantly entertained and brilliantly productive.

One obstacle to having a healthy number of friends, aside from the problem of not really liking anyone, is that friends naturally accumulate around a person who cares enough to remember the stories they tell about their lives. It seemed to me, as I came to the end of the nearly flat bottom of the declivity—an area that I thought would be prone to flooding, although in my experience it is always dry—that my life is becoming more confusing, and therefore not really suitable for locating and acquiring more friends.1

Short of the end of Lorck is Waterworks Place, a pitted single-lane dirt road that leads down toward the river and around a corner to the Water Management facility. I like that last part of the walk the best because it’s especially quiet. On my right is the high windowless side of the water purification plant, and on my left back yards and a baseball diamond. The road leads straight toward some trees that screen the Everal river, then turns right and ends in a field-sized gravel parking lot. Unless there is a health crisis, the only people who park there are Rosie, Agathe, Catherine, some interns, and a half-dozen physical plant people. At the back of the lot, up against the brick monolith of the plant, with its sprouting vents and chimneys, is our single-storey Water Department building, where I work whenever I am not out taking samples. The building’s green siding is decorated, every ten feet, with a red and white badge advertising Icon Portable Construction, which makes it look vaguely official. Rosie’s office is the small square window just left of the door, with the wire mesh security screen bolted over it.

When I came in she was staring at her computer, and that gave me a second before she noticed me. It turned out that second was all I needed. I saw her in many different ways all at once, like the combinations you can spot in a deck of cards thrown face-up on a table. I saw her as a woman in her early thirties, sufficiently older than Fina so Adela couldn’t say, she’s as young as your daughter! I saw her, too, as a slightly older woman, mid-thirties maybe, at least old enough so that Fina wouldn’t say, she’s like I have an older sister! And I saw her, just a little bit, as a person. That last part had to do with a curl at the edge of her mouth, which bent downward in a curious way, hinting she might have feelings I hadn’t thought of. The turn was tiny, just a crease an eighth of an inch long. I remembered someone called it sorrow’s mark.

I saw her thin skin and sallow cheek, which again made me want to care for her. It wouldn’t matter what was wrong with her. (Anemia? bulimia? leukemia?) I’d get her to tell me, and she’d be grateful that I asked, and we’d both be relieved when she unburdened herself and told me everything, right down to her frightening experimental medications and their revolting side effects.

I saw her thin, straight, silvery blonde hair, the kind that would turn white overnight, some evening twenty years from now, when we’d be together in our dark-paneled lodge in the north woods, where we’d have been going each autumn for so long neither could quite remember, always being sure to arrive just after the first frost so all the mosquitoes were dead, a little cabin where we would feel somehow outside of time, as if nothing could change while we were there—and yet somehow magically her hair would turn color in just one evening, and we both would instantly accept it, as if it had been silver forever. That fold at the edge of her lips, like a drawn line, or not even a line but a scratch, pulling the lips down: so expressive, I decided, of her resolution in the face of her illness, but then I reprimanded myself for reading so much into a mouth, and then I forgot the reprimand and loved the little curl even more, all somehow in that same second.

I saw her body upright in the nasty plastic-mesh ergonomic office chair, her spine barely touching the chair’s inhuman double-curved back. I saw her small breasts pushing gently on her loose yellow shirt, its oversized men’s collar hanging down, showing off the pale skin of her neck, which was a beautiful neck, because it continued straight upward in back, blending into the soft curve of the back of her skull.

I saw her elegant hands, the right one about to caress the computer, fingers straight, fingertips curled outward, the other hand a fist, held in midair, gripping a blue Papermate office pen as if she was going to stab the screen. I saw the garish elliptical turquoise ring on the middle finger of her right hand, the braid of cheap colorful plastic bracelets on her left wrist, and above all I saw one magnificent earring, a tiny violet stone set in a fluted silver frame, pendant on a little chain, resting in the dry waterfall of her blonde hair.2

Then she saw me.

— In early, she said.

I smiled at that, because it was nearly eleven. We talked a moment about her brother Albert, who was having difficulty running the farm in Oustic, and how cold it was for mid-October, especially out in the countryside. As she spoke, the little line or scratch at the corner of her mouth kept pulling at her lips, signaling a slight dissatisfaction, as if she did not quite agree with herself, like when a cat is nearly asleep but the very end of its tail keeps moving.

Agathe’s car pulled into the parking lot. She got out, and I could see she was wearing her usual white lab coat, a leftover from her days in the university. Under it there would be glimpses of an expensive-looking business suit. Two inappropriate ways of dressing, one over the other. Rosie and I watched her for a moment.

— Your boss’s here, I said, and then I turned and walked quickly down the hall to my lab.3

**<Chapter 3 The Four Seasons>**

That night I lay in bed, welcoming my remaining thoughts of childhood. They came to me, as they often did, as soon as the tight grip of the calendar loosened and the numbers fell off the days.

Long ago, in an unnumbered year, little Sam stood in a steep field below his parents’ house in Watkins Glen, New York, looking out at the lake. It was midsummer.1

This is something I remember as clearly as if I was there, despite the many years that have passed since that day. I remember it, but I was never there. It was little Sam who stood there, whoever he was, whatever he was.

His world was small. Beyond the back yard with the pond and the woods where he played, there wasn’t much in it. Up the hill was the cathedral forest, with the high pine tree he and John had climbed. Down by Seneca Lake there were marshy fields. A jetty led out into the water, and near its end was a small white lighthouse, probably not much bigger than a person.

In Watkins Glen the seasons and the years went by but nothing changed. Chill spring, fitful summer, biting autumn, bright winter. These days years move forward, they push me, I stumble on toward some awful old age. Back then seasons just turned, the way a toddler turns around and around, unable to decide where to go. Back then years passed and no one got older. Little Sam didn’t think years counted upward one after the other. Instead they had names, like Year of The Pond or Year of the Mulberry.

Sam regarded the weather like the child he was. The sky was flat and bluish white and embroidered with birds. It was home to thousands of insects, floating baby spiders, dust, and fluff, sifting in the soft grainy light, and behind all that, hidden, for a few hours at least, were the stars, which he didn’t want to see because, well, he wouldn’t have said this at the time, but thinking back, he never liked to see stars because they were one of his mother’s special interests, she knew all about them, and for that reason they made him uncomfortable. It was only many years later that I learned to see them.

Watkins Glen got ferociously cold at the end of January.2 Biting winds made the trees whir. Blizzards piled snow against the door. Little Sam’s cheeks used to ache with cold. Icicles came down outside the windows like stage curtains closing. Frost flowers grew toward the centers of windowpanes.

After snowfalls there was beautiful silence. Even birds held their breaths. Every footfall made a painful breaking sound in the crusted snow. The flooded fields down by the lake were covered in snow. Frogs and fish were immobile somewhere beneath. The little white lighthouse was always visible, posted like a soldier at the edge of the open water.

For me those winters blur into a single sense of cold. A snowy winter covered the memory of a snowless one, a tree blown over in a spring gale was forgotten the next year when it was removed and the sun shone on ground that had been shaded.

A cardinal, singing one day in a bare tree when little Sam was out playing, was the same cardinal that had sung outside his window when he was too young to look up and see it. The next day, or the next year, the cardinal was gone, and the bare tree stood out against the snow. A faint shadow of the cardinal still remained until it was erased by the bright winter sun. That’s how time passed back then: colors averaged to gray, details smudged, memories covered one other like snow.

Now the calendar is relentless. It points forward, numbers add, years tick on. Each week in the lab I remember less, care less.

It helps to let images back into my mind: the lake, the muddy pond, the pine, the mulberry, the sky mercifully blank, the fields breathing around me, the balm of days without names, years without number.

In spring the fields by the lake flooded.3 The water down there was stagnant, half-frozen. Leaves hung suspended under a shell of ice, inert in the frigid water.

A dim picture shines in my memory, smudged like a charcoal drawing. Somehow the images of Watkins Glen have gotten older. They’ve become dull. I am faithful to my few memories, but the pictures in my mind have aged. Their color has bled out. Constant use has rubbed away their detail. I try to look carefully because each time I recall the scene it gets that much darker, that much harder to see.

In early spring, little Sam used to go stand in the sloping field below the house to see the floods. The field was hemmed in by an unwelcoming screen of dogwoods and aspens. The grass was wet and the wind off the lake was cold. Clouds in spring were dour, heavy with freezing rain. I’ll go down there, little Sam thought, there will be fish and frogs under the ice, waiting for the thaw.

Back in March, I’d walked to work as usual, down Cather past the strip malls, right on Lorck to the Water Department. There was a thaw, and most of the snow was gone. I brushed by a hedge and saw it was covered with small green buds. That moment, when you suddenly realize the seasons are turning, is supposed to be beautiful. You take heart. You say, This is going to be a wonderful year, I hope it’ll be my best ever. I felt something different, a small but distinct pain. Those buds about to open were an awful sight. In a few days there would be light green leaves everywhere, then bursts of flowers. I wanted everything to stay as it was. In hibernation, half dead. Lorck was bursting into bloom. Healthy stems and leaves were pushing insistently out of the frozen mud around the hedges. A willow was showing white catkins. It was as if the world was going on without me.

Winter is good enough, I thought. It is safe. People walk with their heads down, rushing to get out of the cold. No one can focus on plans or hopes. People go to ground, like grass, accustomed to being matted under snow. Like last year’s leaves, drenched in frigid meltwater. Like the fish in Seneca Lake, inert, safe, encased under the ice. That is how things should be. If the days keep warming, I thought, buds will be compelled to force their way out of twigs. Flowers will burst out naked in the sun. I will need to see what I am.

I knew the feeling I had was wrong. It went against the sequence of seasons, a thing as old as the planet itself. It went against something deep, perhaps even the instinct to live. I was seeing life from the point of view of death.

In the autumn people used to set fires to clear the low-lying fields.4 Sam and John weren’t allowed to go down when the fires were burning, but they liked to watch from their spot in the field below Sam’s parents’ house.

Watkins Glen was burnt-looking at the end of summer, so it was no wonder the brush caught fire easily. The lakeshore looked singed. Even the water seemed thin and flammable like alcohol. Its surface was rilled with wavelets that moved too fast, like a speeded-up film. The fires they set burned quickly. In an hour they’d be out, and the ground would be scoured and black, ready for next spring’s growth.

How many years did I watch those fires? From the age of five or six, maybe, on through high school, but it feels like little Sam saw them for decades, over and over, as long as he lived. The flames seemed natural, part of the weather. Their smoke scumbled into the sky, ash white brushing into ash gray.

I try to watch the image in my mind, but the fires go out of control, burning everything.

Fire boils across the land. Flames billow and howl. Black grit pours into the air.

Then when I look again, the fires have subsided. The fields are quiet. Beyond them is Franklin, where the poor farms are.

In my mind’s eye the world has gone dark, like a picture made of ash.5

**<Chapter 4 A Microscope Family>**

That Wednesday I made a point of getting up early so I’d have time to talk to Rosie when I got in. As I descended into the Great Concavity I rehearsed my lines.

If I said, “Today I’ll get the samples done before Agathe,” then Rosie might reply, “Great, Samuel,” in that tone that forever ruins any chance of a relationship by revealing, in its simple absence of care, someone’s basic lack of interest in another person. I erased that thought and replaced it with a nearly identical scene, take two, in which she said, “Great, Samuel,” in that tone that sets the seal on a relationship by revealing, in its simple openness, someone’s capacity to care endlessly for another person, no matter how embarrassing or problematic that other person might be. So then I imagined myself saying I’d always wanted to get to know her, or some equally ridiculous thing, and asking her out for coffee, and her answering, “Sure, what time?” in that tone that signals, with absolutely no possibility of doubt, You are one of the staff, and since you couldn’t possibly, by any stretch of the imagination, ever think I’d ever be interested in you, but since I don’t actively dislike you, well then, of course, why not, we can have coffee whenever you’d like, provided I need an excuse to get away from the office, and of course provided you really are interested only in coffee and nothing more, ever, ever, ever.

I erased that scene too, and replaced it with one so compelling, so wondrous and full of feeling, that I replayed it later on, even when Rosie and I were actually going out.1

I pictured our eyes meeting, as they do, briefly, when one person comes into a room and sees the other, and in my imagination she didn’t look away. I didn’t say anything, because I didn’t need to. I walked by her to check my mail, as I always did, and she appeared there by the copy machine, standing a little too close to me. The back of her hand brushed my arm, and I saw the two of us hovering there, a foot apart, looking at one another a second too long, and then two seconds, each new second opening windows, doors, airplane hangars into our future, rearranging everything in both of our lives, discarding entire past histories, clearing out whole houses in our memories to make room for places we would live and experiences we’d share, each second combing the neurons in our brains so we forgot everything and paid attention only to the other person, that one person, each successive moment entangling our future paths through life, knotting them together, ensuring that one or the other of us would spend a certain number of lonely nights, in his or her far distant future, after the other had died, thinking of the other person and those elastic moments we’d spent by the copy machine. And then, of course, since it was a fantasy and not the kind of abysmally awkward encounter it was likely actually to be, our faces drew closer to one another, and we kissed, and the first half-second was absolutely the sweetest one, as everyone knows: I felt her breath and then her lips, and then we kept kissing even when Vipesh, one of the new interns, came into the office and stood respectfully waiting to be noticed. That was such an engaging fantasy that I had to stop a moment before I charged on up the four steel mesh steps of the Personnel Building and into my real life.

The first move toward that very rewarding fantasy would have been to ask her out, but at least that morning I was smart enough to know that I should collect my thoughts before I talked to a person who might end up actually meaning something to me, so I went straight past her office and down the corridor to my lab and closed the door.

The lab has three rows of black epoxy resin counters with inset steel sinks, raised electric ports, and gas nozzles—all mid-range government-procured outfitting. On each of the counters are three white student-grade Olympus microscopes. My desk is in front. Standard white metal cabinets run around all the walls between the windows, but instead of books the shelves are full of bottles, many with water samples, some fetid, others covered in dust.

In the back of the room is the emergency eye wash station and, on a metal table, my large research microscope. I bought it for myself as a graduation present back when I thought I’d be a scientist in a university, with a proper lab. It is a complicated looking thing, which some visitors fail to recognize as a microscope at all. It bristles with knobs and handles, and it’s so large I have to reach my arms around it to get to the controls. Adela calls it my mammogram machine. It’s complex, and I haven’t had the energy to set it up since last spring.

Over the years I had Adela and Fina in to the lab, but neither was struck by what they saw. They failed to be mesmerized. For them the microscopic world is a bright light trembling at the end of a tube. They squinted and peered until they caught a glimpse of something faintly disgusting.

— Oh, Adela said, that’s amazing.

They both played out the same insincere enthusiasm, asked the same questions, and didn’t listen to my answers in the same ways. By watching her mother, Fina learned how to widen her eyes to show interest, to say, “That is really wonderful,” drawing out her syllables because there was nothing left to say after that. Neither of them realized that when they said those things they looked up to same high shelf where we store the large jars, and that their upward gazes, which were meant to signify contemplation, and which the daughter had also copied from her mother, were heartbreaking in exactly the same way, producing the same pinch of loneliness each time I saw them.

I may have been drawn to microscopes since I was a child. When I was five, my father showed me his medical school microscope, at least that’s what my mother told me. My father died that same year. He had never finished medical school, so the microscope may have meant something special to him. Maybe he hoped I’d be a doctor or a scientist, it is nice to think so, but also pointless because it’s just as likely that he brought out the microscope on a whim and it had no special significance. Maybe little Sam had been misbehaving and the microscope was intended as a distraction. My father worked at the Schuyler County Chamber of Commerce, that’s what my mother told me, so the microscope might have been nothing more than a toy used to divert his son.

It is a pity I don’t remember my father showing me the microscope, because it should have been a precious moment in my childhood, a record of an experience that had repercussions years later, an irreplaceable glimpse into the short time little Sam had to bond with his father—except that it isn’t. It is just a story about an episode in little Sam’s life that he forgot, a random note from a lost world.

Yet here I am, still fascinated by what is down there in the microscopic world. Still fastened onto the machinery of the microscope. My hands feel at home on its levers and dials. I cling to it, Adela also said, as if it is a person I love.

It has an old power supply with rows of sockets. They are numbered and described in the manual. Even the power plate is beautiful in an old-fashioned way, with its thick white enameled paint and Bakelite sockets. Underneath the two rows of sockets are black metal plates with symbols. They were intended to be self-explanatory, but they are incomprehensible, except the last, which is labeled 220V.

The power supply is like a Rosetta Stone, with writing in different languages. The sockets themselves are a language of voltages and amperages. The symbols engraved on the black plates interpret the language of the sockets, translating one unreadable script into another.

I even admire the two white enameled screws in the center, set in place seventy years ago, when the microscope was made in East Germany. They are at ninety degrees to each other, intentionally, I know, because everything about the large microscope was minutely considered. And especially the four tiny screws that hold the black plates in place: so carefully done at the time, so quickly forgotten.

In the 1970s the company stopped making that model, and the old plant was shut down. One or two of the people who made the microscope are probably still alive, in retirement communities in Spain or Florida, but if anything breaks it may be impossible to repair.

There are drawers full of parts. Small lenses live in drilled-out holes at the back of drawer 16. I look them over, and again it feels like reading. Each lens is like a word, with spaces between. The little lenses are high magnification, for looking at bacteria or the insides of amoebas. Other lenses slot into dividers or are screwed five at a time into round objective changers. Drawer 17 is for larger lenses, some with clips for microscope slides.

The drawers are like pages of perfect writing. Some thoughts are large and beautiful, others small and precious. Each is in its place, eloquent and quiet.1

I turn off the lab lights and switch on the microscope’s main power, numbered 15. It hums as it changes unreliable city electricity into a precise current for the built-in microscope lamps. Needles swing in the old dials, showing amperage and voltage.

The steel, glass, Bakelite, and rubber come from the same factories that had been used to build the V-2 rockets and the optics for the German army. The microscope is heavy and precise, a member of the last generation of well-made laboratory instruments. By the end of the century microscopes had become the white plastic boxes that the Water Department buys by the case.

There is something lovely about switch 15. It is ringed by a painted circle, like the orbit of a planet around the sun. Above is the number one, meaning power on, and below is a zero. Lines lead off to the right and left, like the diagram of an electrical circuit, ending in little round pictures of the microscope’s two lights. Someone at the factory in East Germany spent time on that. A few years later the factory closed and the company made ordinary switches that no one could possibly want to look at.

The lab is dark, but inside the microscope light travels in precise paths. This isn’t ordinary light, the sort that spills and rushes everywhere, flashing off a windshield or gleaming into your eye. It’s controlled light, created inside a Xenon tube at the back of the microscope, reflected at exact angles by first-surface mirrors, constricted to the head of a pin and threaded up through the tiny pool on the stage. From that point the light carries the image of the amoeba with it. The beam and its picture are guided through tiny apochromatic lenses, then folded in prisms and projected, like a miniature cinema, onto a glass screen, where it can be watched like a film. Or, if I choose, the light can be projected onto the backs of my retinas, one of which is helpfully illustrated in the manual in cross section.2

The apparatus needs different parts before I can use it to analyze water samples. I have to consult the manual and rummage in the drawers. Sometimes that sort of work is just what I need, and in the past I have spent days at a time adjusting the microscope. I work about a day each week at the microscope. Over the two decades I’ve been in Guelph that’s the equivalent of four years sitting by myself in the lab, peering into the microscope.

When I bought the microscope, back at Emory, I took pride in learning the hundreds of specially named accessories. Some are heavy anodized metal. Others are delicate as glass sculptures. Some are made of just a few pieces, others are as intricate as Baroque clocks. The parts that move, move perfectly, like the little dial 6 that turns an expensive piece of polarizing crystal inside the slide 7. The dial turns smoothly without squeaking or wobbling like the ones on the Department’s microscopes.

I used to know the proper names of all the parts, in English and German, their optics, how to disassemble and clean them, how to use each to see different things in drops of water. I suppose that people who know about high-performance car engines may feel the same sense of mastery. But today my knowledge wavers. I remember the slide, 7: it is a quarter-wave plate. But I can’t recall the other slide, 24. I haven’t used the large microscope since last winter, and I left some parts out on the table. I can no longer remember exactly what they were for. If I don’t keep in practice the large microscope will be like one of those dreams where you’re being tested, but you don’t know any answers, so you stammer and make wrong guesses and of course you fail.3

I don’t have a problem remembering the largest pieces. There is the projection hood, where life in the droplet of water plays out on a thick glass disk. It is like one of those televisions that appear in old movies, or like the magic lanterns that used to lull children with flickering images of entrancing landscapes and fantastical animals.

The images on the glass are faint and granular like the pictures of Watkins Glen in my memory. I observe both worlds from an unimaginable distance.4

The front of the glass disk is smooth, but the back is ground, and the amoebas move over it like figures in a silent movie, trembling and grainy. There they are, just on the other side of the glass, and yet they aren’t there, they are down on the microscope stage. They do not know they are being observed, and that is comforting. I can watch them until the light heats their droplet of water and they cook.A close-up of a microscope

AI-generated content may be incorrect.

The microscope has eyepieces with scales and compasses inside them for measuring microscopic objects. The idea is to line up the amoeba between the dashed lines, to estimate its area and volume.

Microscopes are the only way to care for things as small as amoebas. You can never touch an amoeba: the instant your finger makes contact it will be crushed. You can’t get to know an individual amoeba, because it swims with millions that look just like it. The most you can do is measure it and look inside it to see if it has been eating well. It would be as if you had a million children. You couldn’t hope to learn their names or remember their faces, but you’d be happy to see any of them. You’d want to know they were healthy, generally speaking. You’d see so many that their features would blur, like the shaded cloud in the manual.

Little Sam is like that in my memory: he gives me a sharp feeling, but he is hard to picture. I can only conjure the places he once occupied.

When Adela and I moved in together, I told her I cherished my time with my tiny creatures and my optical equipment, and that was true but also an excuse to close the door on her. The idea was to give her some of myself, but confine my restive thoughts to the lab. Somehow the large microscope embodied what I was feeling. It had the shape of my thoughts, it was a sculpture of my mind. Really, it was as complicated as my entire family, and mysteriously, it was complex in the same ways: I sensed, without understanding it too clearly, that the large microscope had the same structure as my family. If I could master the microscope, it’d be easy to manage the family.

Intuitively, I knew Adela had to be kept from knowing that, not because she’d think I was crazy, although she might, but because my need for the microscope was neurotic. If she spent too much time with me in the lab, she wouldn’t like what she saw. Clearly my interests aren’t healthy and outgoing like those of the people she used to meet in her yoga classes.

When Fina was young I felt all this in an obscure way, and now that she and Adela have left it’s easier to see how the microscope is a model for the family I had so carefully assembled, that has now fallen apart.

There in the manual is a part that reminds me of Fina. The Fina part is comprised of three individual pieces: public Fina, family Fina, private Fina. Public Fina is part F 14. It is the largest piece, and it is provided with set-screws to fix it in place on the microscope. The family part is Fina 31. It fits in between public and private. Fina 35 is the private part, which she kept to herself.

The three parts slot together, and at first they moved smoothly, each against the next. If something bothered Fina at school, the public Fina part would rotate, and that would cause the family Fina part to move slightly. Adela and I would observe the motions of the family Fina part, and make adjustments.

If we pushed on the family Fina, for example, the public Fina would rotate back a little, and, if we were lucky, the private Fina might also move, even though we wouldn’t see it.

Adela and I had built Fina, but she disassembled herself. Detached herself from the family machine. Unscrewed the centering bolts, F 12, and removed her private self.

Originally, the three-piece Fina part was attached to the family microscope. She should have been locked in place, using lever F 52. But Adela and I never thought the Fina part could be detached from the family, so we let it shift and rotate however it wanted.

One time the public Fina part had a big crisis in school. A friend told her she was awful, in front of her entire class. The family Fina part froze up. The private Fina part might have been damaged or even broken. But we fixed it: we injected lubricant using the greasing valve F 38, and soon the family Fina part was moving again.

Another time she fell while she was skiing and broke her leg in a spiral fracture that looked very graceful on the X-Ray. Then we had to detach her from the family machine using lever F 52, and send her to be repaired. When she returned, she had two metal bolts with silicon sleeves, F 38 and F 40, which turned out to work extremely well, and the next winter she took up skating.

And there is the Adela part, a knurled knob to adjust the microscope’s fine focus. Adela used to require continuous delicate adjustments. A small turn might be too much, and then the world would disappear for a moment until a careful rotation in the opposite direction brought things back in focus. A word, like a touch, might ruin everything.

I pretended I could manage Adela’s changeable character the way I managed the fine focus. I tried to match her intricate levels of diffidence and alienation, A 592, to the simpler levels of my own feelings, A 596. Her emotions registered in numbers and fractions, but mine seemed to have only three levels: one dot for love, two for perplexity, three for crisis.

I thought of that many times as I turned the dial back and forth, in the tiniest increments, trying to keep an amoeba or a bacterium in focus. The knob’s finely engraved notches fit my fingers with exquisite accuracy. The minuscule notches on its rim might even have been designed to interlock with the ridges of the fingerprints in my thumb and index finger. Things in the microscopic world are often out of focus, as they are in real life, and it is important to have a control that is engineered to respond perfectly to the operator’s hand.

During the first years we were together Adela was always in sharp focus, so there was no need to make adjustments. As the years went on and she began to drift, I had to work to keep her image clear. I was good at it, I am a professional after all, but it became difficult. The slightest overrotation and everything would go blurry, I’d lose the specimen, or even lose a day’s work. Focus began to matter. Adjustments had to be made almost continuously. My fingers were always tense.

The Samuel part is the most problematic. It may be too complex for me to understand. The attachment mechanism, which locks the Samuel part to the family machine, is as involved as a space station dock. It has dozens of moving parts, and numbers in the thousands: Samuel 3,902. Samuel 3,915. Samuel 3,907.5

It is hard to remember how the Samuel part works, or what it is supposed to look like when it is put together. It has been disassembled for some time, and it is almost definitely broken. I have examined the place where it used to attach, and imagined the work that would be needed to put it back in place. I’d have to find one of the last German engineers from the original factory. I’d call him in his retirement community in Málaga or Fort Lauterdale and persuade him to fly to Guelph.

I’d bring the old engineer to the lab, and show him the partly disassembled machine. He’d look at it, and then at me, and he’d say,

— You can never be fixed, Mister Emmer, and if you don’t mind I would like to go back to Málaga, or Fort Lauterdale, or wherever you found me, and enjoy my Piña Colada.

— But what am I supposed to do? I can’t watch anything on the screen anymore.

— We all have problems, Mr. Emmer. Who isn’t half-broken?

I swept the manual into a filing cabinet.

It was getting late. There I sat in the perforated half-light, blushing bright red. Cables and components lay around the microscope, all out of order.

How generous Adela had been to humor me. Now that she is gone, I see how threadbare the whole fascination with optics has been. I haven’t been much better than one of those middle-aged suburban husbands who go down to their basements, put on striped dungarees, and play with their tabletop HO-scale railroad sets. I am embarrassed for myself, my mechanical attachments to machinery, and my pathetic attempts to hide the childish parts of my mind behind my supposedly adult science.

I picked up a piece of heavy optical equipment and turned it over in my hands. The thing, which I only vaguely remember, has little mirrors on handles, like the ones dental hygienists use. Its parts swivel and turn.

The object moved coldly in my hands as if it were a dead animal. What is it? I wondered. It fits onto the microscope’s eyepiece and measures colors of light, but how, exactly? I had an odd feeling looking at this object I had once known so well. I used to use it all the time. It was as if someone took out your heart, painlessly, and showed it to you, and you turned it over in your hands, and thought, What is this for?6

I have to get back into practice, because shortly after Adela left I ordered a Zeiss universal stage, the most complicated mechanism available for the microscope. It’s still there, in its packing crate. It’s for the New Year’s break, because at that point it will be coming up on four months since she left and Fina went off to college. Only the most outlandishly intricate equipment will be able to hold my attention and save me from whatever I might actually be feeling.

When Adela and I were first together we got an Alaskan husky named Natick, which means Bottom of the Ocean in Inuit. That dog never looked at you. His eyes were unfocused, as if he was thinking of something far away. We used to joke that Natick was looking north, that he saw the tundra in the arctic. When I patted Natick he looked over my shoulder. I used to ask him if he was listening to polar bears growling, or caribou stampeding.

One day we brought him for a walk in the Conservation Area north of town, and he took off through the woods and just kept going. We called and searched, but he never came back. I tried to console Adela by telling her Natick wasn’t actually in the arctic. He’d been found by someone, I said, he was on someone’s farm, he was fine. For some time she used to stand at the window that looked out toward the Conservation Area.

I know she still loves me, in her way. When she started talking about spending time with her mother, and then when she went back for two months, and the next year for nearly four months, I resisted, and we argued. I was trying too hard, the way you might shout to someone who’s talking to you but walking away at the same time. Then after a certain point she was too far away, emotionally speaking, and I adjusted the amount of energy I spent trying to understand her. Our conversations cooled. We became adept at communicating over vast distances.

It was like the way NASA communicates with those unmanned spacecraft that are out in interstellar space: they send a simple code, like TURN RIGHT, and they wait a long time, and the spacecraft receives the faint signal and processes it very slowly using its nearly exhausted battery. Eventually it signals back: MESSAGE RECEIVED. Then it steers itself even deeper into space. Over the years Adela’s love has weakened incrementally and inexorably, and now it is nearly gone, like the needle of light that peers out from deep inside the microscope.7

Adela and I hadn’t been together too many years before I learned not to hope for more than a tacit agreement about love. She married me passionately but offhandedly, as if she had something else on her mind. I loved her because she saw me, or parts of me, and maybe she sees them even better now that she’s as far away as a spacecraft or a comet.

I’ve never quite understood how she loved me, or what she thinks counts as a good marriage. For that matter, I was never sure whether or not she was faithful. People can be together in a home, but really be apart. A person can be alone, and still be part of a family.

It used to be that thoughts like these would drive me into the lab, where the microscope’s precision would work on me like a balm. Now my need to work has fallen away, and I find myself sitting at a counter full of equipment I am rapidly forgetting.

**<Chapter 5 Amoebas, From Bad to Worse>**

I gathered the sample bottles, field notebook, pipettes, lens tissues, and a couple of pencils hyper-sharpened with the German SUK pencil sharpener Adela had given me, which produced ungodly sharp points that regularly stabbed me when I reached for a pencil, decorating my fingertips with droplets of blood mixed with graphite. If I expected to finish before Agathe, I had to start right away. I had to meet Catherine for our weekly lunch, and the afternoon would be taken up by the lab class.

Amoebas were slowly dying in each of the little milky white polyethylene bottles that I’d filled with water from the overflow stream below the town’s post-combustion coal-fired power plant. The poor little creatures were drinking nanoparticles of plastic, microcrystals of asbestos, and hydrophilic molecules of detergent. The only question was how long it would take them to die. The City Council wanted to certify the plant so they could approve a tax break. Agathe had the same samples in her inorganics lab, and as soon as she finished she’d be in to compare results. We both knew the water was toxic, but we had to keep measuring—and besides, I was curious, like for some reason I often am, about things that are dying, and especially about dying things that no one notices.

I took a pipette of water from the first bottle, labeled 22.10.2019 7S, and placed a minuscule droplet onto the center of a slide.

I moved it forward and backward on the stage of the microscope, scanning. In a minute I found one.

It was drifting with the tidal currents in its droplet, parachuting down through the supposedly marginally clean water. Its sky was full of cinders, like ash from some great disaster.

As usual the amoeba’s liquid insides were clogged with blebs. They looked like grape seeds or silver coins stirred in someone’s pocket. Healthy amoebas have clear watery areas inside them. Their granules float freely in glassy liquid protoplasm. This one had an opaque body. It looked cramped. It was suffering.

I noted its density and size in my notebook.

The ashfall reminded me of an afternoon long ago when little Sam had been out in the field below the house, watching the autumn fires. The wind turned, and suddenly, under a clear sky, it rained flecks of ash. Tiny scraps of burnt leaves settled on Sam’s shirt, and on the palms of his hands. There was no sound and no smoke, just particles of ash from a clear sky. As if heaven had burned when no one was watching.

The amoeba jerked to the right, and then continued its silent fall, like a drop on a windowpane forced sideways by a gust of wind. I used the Adela knob to keep it in focus, and turned the Fina part so it stayed in view as it drifted.

As it went it changed shape. I saw it as a headless cat with soft paws and a Manx’s tail. It had leapt off a cliff and was quietly plummeting through watery space. It had no sense that it was falling, because it wasn’t moving past anything. It was falling together with its entire world. Posed, like a porcelain cat, tumbling in midair.

An amoeba might spend its entire life in a current like this, no solid ground, no bottom in sight. This particular one had been in the overflow stream, which meant it had been in the Everal river, probably in the muck near the riverbank. It had been sucked into the power plant’s cooling water intake pipe and run through the plant. Somehow it had survived the heat and chemicals and been spewed out into the overflow stream, where I’d caught it, without knowing, in water sample 22.10.2019 7S.

For a moment the current on the slide stilled, and the headless cat hung motionless. Like a heavenly body, suspended in outer space, in a gray sky punctuated with black stars and extinguished meteorites. Rotating, ever so slowly, and glowing like a neon light.

From its point of view there was no Everal river, no intake propellor or rusted pipe, no city worker wading into the overflow stream with a pipette and a plastic bottle, no microscope with a ground glass screen, no enormous eye peering down. Amoebas don’t have eyes, they can only sense the water. It didn’t know that in a minute or two it was going to be wiped away by my lens cleaning tissue.

It might be killed by the lens tissue, because the paper fibers are dry and could suck the moisture out of its body. But it might have time to encyst. In that form it would survive the trip to the garbage and the drive out to the Watford landfill beyond Oustic. It would still be living when it is was buried, wedged in with plastic bags and bottles. There it would stay. It might rest, if you can say a cyst rests, in peace, if you can say such a thing about an amoeba, for many years, possibly even thousands of years. No one knows how long amoebas can live in their cyst state. Long after I have retired, perhaps even long after I have died, it might still be alive, if you can call that surviving. Perhaps it was the one saying goodbye to me.

I think I like amoebas also because they cannot return my affection. It’s normal to fall in love with people who don’t love you back. In fact it’s safer that way, because you won’t be waiting for the loving look in return. I love the amoebas and other small creatures in the water supply. I can’t touch them, and usually I can’t even tell the difference between one and another.

People are forever wondering what happiness is, aside from mindless happiness, like a butterfly sunning itself, or infantile happiness, like a baby beaming at nothing. My happiness isn’t different from those. I’m alone with my affection, which is constant, and relaxed, and costs me nothing.1

Amoebas are also endearing because they try so hard to figure out what they are. I watched this one as its legs shifted back and forth, and its stubby tail curled upward. It grew a skinny black head with a button eye. The little head turned and looked away into the water. Its front paws splayed and it skidded a little. It was no longer a cat. More like a curious dragon from a children’s book. Inside, it was very ill. There were black masses over its stomach and heart.

— Where am I? it wondered. Is this the sky?

Its little face was too simple to have an expression. The imaginary faces of amoebas are easy to look at. People’s faces are subtle and complicated. Full of quick movements, hints and signs of what the person wants, what they think of you. A person’s face is like one of those cell phone towers that bristle with dishes and antennas. Receiving and sending hundreds of incomprehensible signals. Even a deliberately neutral face, like the one Catherine puts on, relays enormous amounts of information. Habitual fear, flickering hope, ineffectually hidden uncertainty. I can hardly look at people’s eyes. They glint with diffidence or friendship, their wet shadows gleam with affection or dislike, their lids tick up and down in exhaustion or annoyance. The patterns in their irises and the minuscule blood vessels lacing their corneas tell stories of bursts of joy or years of disappointment. The skin of their cheeks turns hundreds of shades of amber and rose, revealing remnants of blushes or oncoming illnesses, and always, in the changes of light, the marginally discernible traces of sex.

Amoebas don’t try to signal anything. They’re just barely alive, a half-step beyond spittle.

The spot I was imagining as its little eye bulged with surprise. One of its front paws looked engorged, tumorous. The other, the one it had been standing on, swelled into a club foot.

— What is becoming of me? the little monster thought. One of my front paws hurts. The other has gone numb.

It looked down.

— Where am I going? It wondered. For that matter, where have I come from? And what am I?

That’s how it goes with amoebas, always from bad to worse.

I blinked and looked again, and the amoeba had become a man, or a cookie shaped like a man. Wearing a fancy holiday outfit, with one comically big blurry boot.

— My stage shoes don’t fit, the little man said. And my coat is too big.

The phone rang. For some reason I’d put it on a counter behind me, ten feet away. I wheeled my chair under the table to get leverage, and pushed off, gripping the arm rests as the chair hurtled between the tables and crashed into a cabinet, pinching my left index finger.

I said hello in a sour voice, scrutinizing my finger. My hand smelled of amoeba water.

— You okay?

It was Tee.

— Fine, hurt myself. I’m fine.

— One minute.

There was a pause. I heard two small clicks. He was probably answering an email or texting someone.

He called me every month or so and we spoke about ten minutes each time. First he listened to a condensed version of whatever news I had, which generally lasted no more than a minute or so, and then he talked to me about himself for a couple more minutes until he couldn’t think of any more news or until his pending appointments and texts became urgent. He divided his attention at every moment into multiple topics: there was the person he was talking to on his phone, that would be me, and at the same time there was usually another person on hold, probably several more he was texting, and quite possibly someone waiting in his office. Some portion of his mind was given over to planning conversations with people he was going to call or meet later in the day. Another part was dedicated to people he was scheduled to meet in the next few business days, and to the preparation necessary for those meetings. Yet another portion was focused on the very important and internationally famous people he was hoping to meet, each requiring rehearsal and research in order to ensure not only the high level of success that was now expected of him and his company, but also the kind of unexpected surprises he felt obliged to announce after such meetings, including new acquisitions and partnerships, generating the unparalleled opportunities that propelled his company not only along its frighteningly steep current growth curve but even above that, into a sheer vertical climb toward infinite fame and power. It was only thanks to his exceptional business and management acumen that he reserved the remaining bandwith for me, seldom more than five or ten perent, but never quite zero.2

A thin strip of skin had scraped off the last joint of my index finger. Two droplets of blood popped up on the exposed flesh.

Tee came back on the line. He’d read an article in the Toronto *Globe and Mail* about the boy who had been swimming in our city reservoir and was killed by *fowleri* amoebas, the ones that swim up your nose into your brain. He wanted know if the report was accurate.

I considered. He wanted facts, efficiently and reliably deployed. In that he was like our mother, although I could never tell him that.

— A fluke, I said. One in a million that a *fowleri* specimen makes it up a swimmer’s nose.

— One point five, the paper said.

— So the child died. We had to do a special study. People were distraught. The city pools closed. We filtered a thousand liters of water from the reservoir where he’d been swimming.

I manipulated the microscope with my injured hand, pointing my blood-spotted finger out to the side.

Onscreen the amoeba man was walking along, arms splayed theatrically, tiny round mouth wide open like he was belting out a Broadway tune. He was a harmless species. If he ever got up someone’s nose, he’d go out with the mucus.

— Do I look like the kind of guy who would want to go up your nose? he asked.

He sported two black mittens and crazy big boots. His costume was amazing, all plastic rhinestones and giant sequins.

— Hey there, Emmer, is this a cool outfit or what?

— You look happy, I said.

— I’m just stepping out, the amoeba said. Want to come?

I heard a sound like shuffling papers. Apparently Tee wanted more information. This was my role, when I had one: provide specialized facts safely unrelated to our family.

— The result, I said, is that the water in that pond is officially safe, because we got an observed concentration of less than ten organisms per thousand liters. Still, you only need one amoeba in each nostril and you’ve got a fifty percent chance of getting an infection that’s ninety-eight percent fatal.

— So? the amoeba said. Want to go? I won’t look good forever. Actually I’m pretty much melting right now, but I’m having a great time, you know, much better than you’re having. You should consider coming along. I don’t see how your brother has anything much to recommend him.

The nail had a definite discoloration. It was the same finger I’d recently stabbed on one of Adela’s pencils. The tip was peppered with graphite dots from the SUK sharpener.

— So guess what, Tee said, Cayla and I have some great news.

Apparently I’d said enough to let him prep a brilliant speech at his next dinner party. He’d tell everyone his scientist brother had an exotic, dangerous high-tech job that put their dull businesspeople lives to shame. Tee pretended to be interested in my work in order to avoid talking the way brothers should, especially brothers who haven’t talked in a month, and most especially brothers who have a third brother who should be an object of concern, or even the main topic of conversation.

— Swimmin’, the amoeba sang.

Swimmin’ in oblivion

Swimmin’ here and there

All down through the ash-filled air.

— I’ve been invited to the VCRC, the Vorschwild Capital Research Center in Frankfurt, that’s a consortium of businesses interested in multinational resource pooling and liquid labor markets.

— Wow, I said.

— Please please please.

Put on your shoes

Straighten your tie

We’re goin’ out quick

Before I die.

— It’s a hectic schedule. From the moment I land, I’m booked.

This was the news portion of the phone call, in which Tee got me up to date with his accomplishments, and I was expected to cheer like an spectator at a military parade.3

The little man disappeared. Once more the amoeba was the monster it had always been. It projected four spotted penises.

— We are the Four Penises, they sang in harmony.

— We’re expecting protests! I am concerned, a little. I want to do the right thing, but it’s hard when you’re in a motorcade.

The four penises waggled in the water. They were delighted with themselves. They sang in a rising sequence, with minor tones.

We’re the Four Penises

There’s no way to reason with us

Soon we’re going down the sink

But four penises, just think!

That’s one for every occasion

No need for special persuasion

Just slide on up and say, Hey

If four’s not enough another’s on its way!

— Excellent, I said.

Surely Tee could hear the distance in my voice. He’d started these litanies of so-called fun achievements after Alec stopped communicating with us. Alec used to be the one Tee felt he needed to impress.

The amoeba turned into a glove. Something to slap Tee with. The fingers stretched, as if someone was trying it on.

— Let me at him, the glove said, stretching and flexing.

— And an awards ceremony, with a row of boys dressed as angels, playing gold trumpets like in heaven.

— Slap slap slap, you may be a billion times bigger than me but step onto my stage and we’ll see what we’ll see.

— Want to come? I’m sure I could get you seats. For Adela, too, and Fina, if they want.

— Well, Adela is…

— I didn’t mean to assume anything. Whatever you do is fine. It’s a year from now. Almost exactly, October 15. Anyway between now and then there’s a lot, I’ll be in Yanbu Industrial City, Singapore again, Tianjin, Khed City.

The glove was turning into something else. An orchid, perhaps. Amoebas hate to have a shape. If you’re an amoeba you play at being something, because actually you’re nothing. You pretend to have qualities so people don’t get alarmed. It’s the wisest thing I ever learned from a creature that has no mind.

— And Shenzhen, Ningbo, Houston, Cape Town for the new branch. Jubail of course.

I imagined two amoeba-girls sitting at a bar. One whispers to the other:

— Who is that ball of slime sitting down there?

— Oh, her friend says, I don’t know. I’ve never seen a shape like that.

But then the amoeba-boy notices them looking. He smoothes himself into his best shape.

— Oh my gosh, the first amoeba-girl whispers to her friend. See that? He’s turtle kid from last year.

— Öndör-Ulaan, that’s the rare earth belt in Mongolia, and Ialghujari in Kutaisi, amazing tax exemptions there, and Uis in Erongo in Namibia, for the tantalum mine.

A purple crescent had formed under the base of my nail. I could feed the amoeba some blood corpuscles. I put the phone down in order to squeeze some onto the slide, but the drop fell on the floor. I smeared it away with my shoe.

It was almost time for my appointment. I opened the next bottle, 22.10.2019 8S, and took a fresh pipette. The amoeba saw me do it.

— I’ll be dying soon, it said, so I’ll just say goodbye now.

I didn’t live a great life, but I didn’t really try

My idea was more or less swim ’til I die,

So I swam in ash and I slept in muck

But just at the end, the most amazing luck!

I got to go onstage and sing.

So thank you Samuel for everything,

I’m all done now, my sodden luck has run,

I’m good and ready for oblivion.

Tee was still talking. I picked up the phone.

— I just want to know if you’re on board.

He was probably still talking about the prize.

— Of course, I said.

— Great. You don’t need to bring anything. And whoever’s in your life can come.

— Okay.

— And remember, arrive early.

I asked if Alec would go.

— For heaven’s sake. He never does.

It was as if Alec had died. Tee and I both wrote to him, but he didn’t respond. Calling was useless. He never picked up. Neither Tee nor I had much of an idea what had happened. He still lived in the same cramped three-room farmhouse in Delaware, even though he had two daughters. Tee said Alec was a chronic procrastinator. But that’s what Tee would say. He painted Alec as a failed version of himself, a person who could have changed his life but didn’t. In Tee’s eyes, I was probably a step or two away from the same torpor. My lackluster job in a backwater city, forever limited by a government-mandated salary cap, was nearly the same, on Tee’s scale of things, as Alec’s retreat to Delaware and his ongoing silence.

When Alec first stopped answering emails and calls, in the years after our mother died, I thought he felt our mother’s death in a way that I hadn’t. Maybe he was depressed. But when he eventually did write an email or send a postcard, he didn’t sound sad. Mostly he wanted to tell me how much he disliked the current government, and how hard it was to keep undesirable people from buying the neighboring farms.

— I got an email from him about a month ago. It was typical. You know: Dear Tee, sorry I have not been in touch, but the house is such a mess with the new porch, stuff like that.

— What new porch?

— I have no idea.

Tee sounded tired. Thinking about our family seemed to be the one thing that exhausted him.4

I took the slide off the microscope stage and wiped the droplet of water with a piece of tissue paper.

— We should go visit, I said.

— Sometime.

— And how is Cayla?

— She’s super-excited about the trip to the VCRC. But…

There was a pause, and then he said to someone in the office, “Just take that and go.” I pictured him making that dismissive wavy gesture people make, as if you’re a fly.

— Samuel? Sorry, have to run. Remember, December in Boston. Christmas.4

My hand, the one that had been pressing the phone to my head, dropped slowly down to my side. Then the fingers detached themselves from the phone, one by one, and the phone fell to the floor with a loud clap.

People say that if we could look into the future and see how our plans and our health and our love and our fame fall to pieces, then we’d be more modest, more grateful for what we have. People don’t often say that if we could see into the future we’d also understand that self-absorbed people remain that way their entire lives, that success can make them less liable to change, more stubbornly fixed in their places. If we could understand that, we might be more likely to give up on people. We’d be free to relinquish the supposedly sacred fidelity to family. My brothers and I were not going to heal. We were like a petrified forest, each stony trunk regarding the others in stubborn isolation.

It was five to twelve: once again I was going to be late for my lunch with Catherine. It took ten minutes to walk to the Yellow Hat, maybe eight at a run.

I nearly knocked over Rosie, who was standing in the hallway.

— Off to have a nice lunch with Catherine? she asked, knowing I wouldn’t.

— Rosie, I said, without thinking, would you like to go to dinner?

— Love to, she said.5

— Mikuya, this evening?

I imagined little Sam, looking up from my own knee height, watching his adult self with awe and admiration.

— Sure, she said, stepping to the side so I could get by.

I scampered off down the hall like little Sam. I had been hauled up from the acid bath of my family and my work, not to mention from the brink of the abyss of the fog of the sadness of silent self-regard, by entirely ordinary words from a person I hardly knew.

**<Chapter 6 A Story About Dante>**

Being late to meet Catherine for our weekly lunch had consequences. The freeze could last for weeks afterward. I walked as quickly as I could down toward the roundabout at Ontario Federated. From there it would only be five minutes.

— Why do you have so many roundabouts? Adela had said when she first came to Guelph.

— Let’s find out, I said, and we drove around and around, looking at the oblivious Canadians in other lanes. We were largely happy back then. I told her she was like a comet shining in the night sky. I only meant she was dazzling, but it turned out the comet reference was accurate, because like a comet, she was just passing by, and as the years went on she followed her natural path, drifting away across the heavens. I’d thought of that back in March, when I went out late one evening into the parking lot in front of the Personnel Building in order to see a comet, a real one. It was a blustery night, and I hadn’t especially wanted to go stand in the parking lot, but Catherine sternly reminded me it was my last chance to see the comet.

— The waxing moon will brighten the night sky, she said, and next month the comet will be gone and it won’t come back for a hundred fifty-two thousand years.

It was hard to say no to that, especially because Catherine’s unnecessary precision reminded me that my mother would have said the same thing. So I went to see the comet. It turned out to be uncanny, like a waterfall hanging in the heavens. I thought, there’s Adela, heading back out into space. Soon she won’t be any warmer than a star.

But a person’s family isn’t supposed to just wander off. A family shouldn’t end without at least some crying and shouting, without one of the people even bothering to tell the other exactly why she is leaving. A family shouldn’t simply disperse as if its members are strangers riding on a bus, and the bus stops, and they get off and walk away.When families end there’s supposed to be a reason, like someone is unfaithful or abusive or maybe a drug addict or basically just insane. None of that was true of my family, and yet Adela lost interest in it, and so did Fina. Last year they both went away, and it isn’t easy to say exactly why that happened.1

I walked around half the roundabout and on toward Pearson.

Explaining my odd childhood and evaporating family, I thought, is going to require something more than a run-of-the-mill story about how life can get away from you, the sort that begins with a line like, “Midway along the road of life I found myself in a dark forest.”

In that story the person has strayed. We don’t hear about what he did, because when the story opens he’s come to his senses and realized he’s in trouble. The lost person searches the dark forest, and surprise! He finds a door or a portal, even though there really aren’t any doors or portals out in the woods, but he goes through anyway, and has some temporarily scary but fundamentally marvelous adventures, and comes out a hero and is bathed in glory, whatever that means.

My version of the story isn’t that tidy. It might go more like this: “Midway through the potentially interesting but probably purposeless journey of his life, poor Samuel Emmer woke to find himself wandering in some dark shadowed forest. He had strayed off the path of his life. He’d been careless, that’s what. Unaccountably, he’d failed to notice that his family had realized something was wrong quite some time ago, and they’d turned back, and now he was alone. So did he retrace his steps? Did he try to find his wife and daughter? Did he even shout to see if they could hear him? Of course not. He kept going, into the deepest most oceanic forest. He walked right by a sign that said WRONG WAY. RETURN TO ROAD, and another that said RETURN AT ONCE TO THE ROAD OF YOUR LIFE, and even one with big nightmare stenciled letters that said SAMUEL EMMER TURN BACK BEFORE IT’S TOO LATE! But like the idiot he was, he pushed on, walking for hours, and then for days, and for that matter in real life for years, with no sense at all of where he was going. ‘It’s enough just to keep walking,’ he told himself as he shoved his way through the thousandth thicket, ‘that’s what we all do. It’s what it means to be alive, really, you set out from your cradle and go, and besides, it’s what my wife and daughter expect, they’re probably content just to follow, well, probably they are, maybe I should ask them. Maybe I should turn around and see if they’re even there.’”

In the poem, the person stops in front of the door or the portal, and he reads the famous sign, ABANDON HOPE ALL YE WHO ENTER HERE, but it doesn’t bother him, and he goes right in and discovers an enchanted land full of angels and demons. He finds a guide who takes him for free through heaven and hell, and he comes out enlightened. The only true part of that story is that people get lost, and that part isn’t helpful, because who doesn’t look back after half their life’s over, and think, “My god, how did I get here, of all places?”

So I continue to wander. I console myself by rehearsing a poetic but not very comforting story about how I left the path of my life and got lost in a dismal forest.

It isn’t much of a story, because there is no great poet to guide me and no spectacular sights like tornadoes of souls or people frozen in lakes of ice, gnawing on each other’s skulls. In the original there’s even a scene where the hero gets to the very lowest level of hell, and then, in a reversal that’s so weird it’s sort of funny, he climbs down into Satan’s crotch, maybe actually crawls over his scrotum, but after that everything starts to look up, and there’s this clarifying ascent into pure Empyrean light and divine love. None of that is going to happen in my version. I have wandered for some time now, and I haven’t found much that’s worth noting.

In the poem you get the impression the forest is actually more dangerous than hell itself, because the hero wants to leave even though he has to walk under the sign that says ABANDON HOPE ALL YE WHO ENTER HERE. Afterward he says the forest was horrible, like death, and it makes him bitter even to remember it. The oak trees howled in despair, he says. The forest was endless, a maze, a perdition.

The person who wrote that must have had a terrible fear of forests, even worse than his awe of angels and demons. Also, if the hero hadn’t found the portal, there would have been no story, and that would have been direr, at least for the poet, than the last circle of hell, which was wonderful in its own way. His hero would have just walked around, mulling over the fact that he’d lost the path of his life, tearing his hair, beating his chest, and bemoaning his fate, because that’s what people did back then. He wouldn’t have had the fun of meeting angels or demons. He says he was afraid of being gored by a wild boar or torn apart by wolves, but if he hadn’t found the portal he probably would have died in a more prosaic way. Maybe he would have been wandering at night, weeping and praying and imploring the moon to help him find his proper path, because that’s also what people did back then, and he would have stepped off a cliff. That might have made an okay poem, but more likely he would have gotten exhausted and weak, and eventually died of dehydration or exposure.

In a modern movie version, he might have been sitting at his campfire, cooking his broth of mushrooms and moss, feeling lightheaded and dizzy from malnutrition, wishing he could actually find a door or a portal, when he’d hear his wife calling him. It would turn out his family had been searching for him the whole time. At first his daughter would be afraid of him, because of his mountain man beard, but then she’d walk up and offer him a Kit-Kat, and he’d burst into tears, and his wife and daughter would lead him back to the road of his life, which of course would be just behind him over a rise.

Or the movie might be more mysterious. The hero would fall asleep on the forest floor, in a soft bed of willow leaves, and wake in another forest, a magical one, maybe the kind of forest where you walk for a while, and then you feel drowsy, and you make yourself a soft bed of ferns, and you fall asleep again, and wake up in yet another forest, an even more magical one, a gleaming forest in a dream inside your dream. Anyway he would walk a while in one of those forests, feeling pretty exhausted from all the falling asleep and waking up in other forests stuff. After another deep sleep on a soft bed of dewberry, and maybe another on a soft bed of wood anemone and wild geraniums, and maybe another on a soft bed of crimson fuchsia, pink purslane, and pimpernels, he’d wake up feeling curiously refreshed, and go on deeper into the strangely glowing forest, and come upon a curious stone house in a clearing in the woods in the dream in the dream in the dream. He’d go into the kitchenette, and there would be his wife and daughter. He’d stay there with them, tending the garden, walking around in a white robe, admiring the tame deer, and everyone would be quiet and happy, but it wouldn’t be so happy in the end because actually he’d be lying on the forest floor, dead.

And of course these days there would also be a science fiction version of the story. It would open with the hero’s daughter playing in the family’s inflatable pool. The sunlight would be glinting, and there’d be lots of lens flare and out-of-focus smiles and swelling happy music. Then the hero would catch sight of something moving in the woods beyond the hurricane fence, and he’d squeeze through a break in the steel wire mesh and find himself in an ancient forest, who knew that was just beyond the subdivision, and he’d discover a magical door or portal with an alien-looking control panel, and he’d touch it, and it’d shoot out wisps of magenta light, and he’d walk through the door or portal and find himself in… in the same forest, that would be strange, but he wouldn’t think about it, he’d run back out, and his family would be there, just like before, and he’d be overcome with emotion, and he’d pick up his daughter, and that’s when he’d notice her left ear was on backwards.

The problem with those versions is that they are fantasies, even the ones where the hero dies. Whatever is happening to my life doesn’t correspond to any book or movie I know. You’re lucky if your life is like a story, because then you can just watch movies or read books to find out how to live. You’ll see a character in a movie, and you’ll say, I totally recognize her situation! I can make better life choices than that poor woman, or, I need to be humble and thankful like that guy, he paid it forward and everything worked out for him, or, Wow, I really should have an affair, they’re so exciting, or, Hey, I can pick up a comically enormous gun like that woman and splatter this place with alien guts, or, Jeez, I can be strong like that other woman and put up billboards about anything I want and never back down and stick to my principles and end up going on a morally dubious vigilante mission, or, Gosh, it’s okay that I’ll never be filthy rich, because look how that guy had to hurt people to get to the top, or, It’s too bad rich people are surrounded by chinless sycophants and chiselers, if my uncle was a billionaire media mogul I’d stand my ground, I’d win him over in the end and get all the money, or, I would never drink like that guy, he totally ruined his life, even though actually it was a pretty glamorous life if you think about it, or even, Wouldn’t it be cool if I had a family just like my real one, but in a parallel universe, where little girls have one ear on backwards, up until the age of sixteen, when they are, unfortunately, harvested for their organs, because living in that world would give me a chance to be a real hero, I’d find a way to get to the corporate fortress in the clouds and bring it down in a dazzling sparkly explosion, liberating my real family, including my daughter with her ear on the right way around, who would come blinking out of the slimy pod where she’d been kept along with thousands of others in suspended animation for some reason I could never quite understand.

But if you don’t see yourself in other people’s stories, and I don’t, then there’s a problem. Some books and movies are wonderful amazing astonishing stunning tremendous and spectacular, and many are tender romantic sweet uplifting and sentimental, or else feel-good playful fun gentle charming understated whimsical and safe, or else heartfelt heartwarming heartpounding heartrending heartbreaking and heartstopping, or sad serious deep dark eerie meaningful searing harrowing devastating ominous and depressing, and a few are hyperviolent shocking excruciating jumpy graphic sadistic and disturbing, or scintillating razor-sharp effervescent giddy and iconoclastic, or ambitious cerebral profound epic and visionary, or just campy coarse rude and goofy. None of them fit my life. Also, books and movies are populated by exotic sorts of people I have never met, like spies, hitmen, gangsters, and astronauts. Or made-up creatures like angels, demons, superheroes, vampires, zombies, and assorted aliens. Books and movies are always full of drama, there’s lots of screaming and crying, people streaming tears, trembling or gasping. A lot of books and movies are stoked with anger or fear. People throw plates or bottles or whatever they have at hand, lamps or hammers or fire pokers or club aluminum pots, people attack one another with assault rifles or pistols with long silencers, or tasers or phasers or lasers or disruptors, or nail guns or power drills or captive bolt pistols, or clubs or maces or halberds or jousting lances, or even just paperclips, toothpicks, and pencils. People say things I have never said, like, Vinnie, this is it, it’s yer last chance buddy, or, Trust me, baby, my word is gold, or, Carol, just give me your hand, I’ll pull you up, or, Steph, I know I never told you I love you, but gosh darn it I do, or, If you’re such a big man then go ahead and pull the trigger, or, If I’m not back in one minute, call that number, or, If I’m not back in five minutes, let him have it, or, If I’m not back in an hour, just forget me and go on with your life, or, If I’m not back in a week, open this envelope and maybe, just maybe, you’ll forgive me, or, If I’m not back in a year, go to this address and ask for the man with one green eye and one blue eye, or, Did you see that, Jeb? Something moved in the cornfield, or, If we just try, Frank, we can make it like it was before the monkeys, or, Daddy, I don’t want Cooper to sleep in my room anymore, his eyes are too bright, or, Oh my god Bill I thought you were dead, or, Oh my god Bill I thought you were a robot, or, I’m so sorry Bill I thought you were a stapler, those sorts of things. People run over rooftops, well, I have done that, or they dangle from ski lifts, cling to the landing skids of helicopters, run away from bears, drive at incredible speeds through parking garages, jump off the decks of burning sinking ships, slide down the slanted glass roofs of skyscrapers, wrestle Galacton for control of the emerald scepter, drink strange vaporous potions, hide behind a car and fumble in their leather mag belt for fresh ammo, place those magnetic timer bombs behind some pipes, patrol a war zone and hold up one fist as a signal for everyone to stop, point with two fingers to their eyes and then out into the jungle, make that zip-your-lips gesture, hold their flashlights as if they were going to stab someone, fall down the basement stairs and land on a body, cower under the basement stairs while an alien probe gawks in the windows, sweep up the basement and discover a trap door leading to an ancient tomb, snoop around the basement and open a freezer case with the neighbor’s head in it, feel a wall in the basement and realize it’s soft like skin, sneak around the basement and get knocked over the head with a shovel and wake up in a ball gag and a straightjacket, stand still in the basement and hear a faint voice behind a brick wall, go down into the basement to see what’s been causing that tapping sound and discover a woman chained to the ceiling, or find a large empty room in the basement with a man standing facing into a corner, muttering and breathing really fast, and call out to him in a whisper, Mike? Mike? Is that you?

Even in stories about ordinary people there is a lot of violence, much more than the few fights and accidents I have seen. There is hardly a novel or movie without a murder or two: a family plot, an assassination, an ambush, a police murder, an epidemic, a massacre. There is hardly a crime series that doesn’t start with a detective called out to an abandoned warehouse or gutted factory floor or remote dirt road or disused quarry or steaming landfill or muddy embankment or dank underpass or desolate spillway or culvert or tide pool, where they show their ID and step over or under the police tape and examine the victim, whose body is naked and bruised or cut or scarred or mysteriously tattooed or etched with acid or brutally kicked and broken or frozen or horribly burned or gruesomely dismembered or grotesquely bloated or revoltingly defiled and unspeakably mistreated in ways that are not shown but make the experienced forensic pathologist blanch and turn away.

Even in artistic books and movies people suffer and die at an alarming rate. A woman might have to watch as her father becomes disoriented with dementia, and then her husband dies from a heart attack. Another woman might get a brain tumor, then recover, then be hit by a truck. A man might be so traumatized by his sister’s death that he sells his house in Basel and moves to Trondheim with his aging uncle just to forget everything and they have one wonderful evening together drinking wine and watching the sunset over a fjord and talking about how life is unpredictable and sad but there is always love but in the morning the uncle is dead.

I cut across a strip mall parking lot toward Hemlock Brook Estates, Guelph’s largest retirement community. If I walked fast enough I’d be at the Yellow Hat in three minutes.

— Hemlock Society, Adela had said when we saw that sign. Where they actually plan to die.

— Hemlock Brook, I said, where they hope to live.

The death count is even higher in movies set in the future or the past. Cities, nations, entire planets can be wiped out. There is usually an apocalyptic war, followed by a trip to an eerily quiet and peaceful off-world settlement, like Tatooine in the *Star Wars* movies, or a rough mining station on one of Jupiter’s moons or a science station orbiting a mysterious ocean world or a frozen planet with an underground prison or a lawless but entertaining trading colony or a deceptively peaceful Earth-like planet with humble farmers leading a simple life borne of the earth, a planet that resembles New Zealand or the Pacific Northwest or the desert Southwest or some location in Tunisia except that it has dozens of terraced waterfallsand fabulous castle-like buildings with spires and banners, or else there’s a centuries-long journey to a black hole or a wormhole or a radiation zone or a glowing nebula that’s been sending out distress signals, followed by time travel that loops back to a pre-apocalyptic war, or forward to a post-apocalyptic war, followed by even more confusing time travel in which fathers meet their sons as fathers and sons meet themselves as fathers and brothers and sons, all leading to some galaxy- or universe- or dimension-wide war involving increasingly elaborate hybrids of people, avatars, robots, drones, androids, holograms, humanoids, cyborgs, and aliens. In the end the body count is astronomical, billions or trillions of people dead, entire civilizations except for a single survivor from each planet, or one out of every two people in the entire universe, or all carbon-based life forms except for those with special chips, or everyone whose inbuilt obsolescence timer hasn’t been disabled, or everyone over twenty-eight years old excepting one really nice grandmother, or everyone who thought they were real but were actually holograms, or everyone who hoped they were holograms but were unfortunately real, or everyone in every alternate universe that ever existed or could exist or could be conceived by anyone, or just everyone, period, except for the heroine and a couple of token extras they can use to launch the sequel, including a suspiciously faithful cyborg, the heroine’s plucky little sister who is probably part alien but is awfully cute and just has to be brought along, and one especially handsome guy who is sure to be the love interest a couple of seconds after the credits roll.

I rushed down Pearson toward Guelph Health. The Yellow Hat diner was almost in sight.

My life has no violence in it, at least so far, but it things have happened for no reason, and I have memories that don’t seem to mean anything, and I am losing sight of my wife, she is farther away each day.

That’s not what you find in books and movies about ordinary people, people supposedly like me, where the character lives a fairly optimistic life in a low-rise apartment building in a mid-size Canadian town or a nostalgic 1970s suburb or a run-down working-class neighborhood in the shadow of a freeway overpass or a small town in Montana with a picturesque Main Street where everyone drives pickup trucks and there’s a view to snowy mountains, where he works in a paper mill or drives a logging truck or tends the local bar or works at Dunkin’ Donuts or Applebee’s or Sizzler’s or Baskin Robbins or Arby’s or Long John Silver’s or just McDonald’s, and spends his time with his son who is especially needy because he is scarred by his mother’s tragic death and he is autistic or has acute lymphocytic leukemia or he’s just underweight or overweight or basically really pimply, and the father keeps going, despite his gnawing loneliness and deep sense of disappointment, because he’s resigned to his lot and sustained by the innate goodness of his heart and the natural generosity of the people in the town, especially his neighbor, a plump and plucky widower who wears calico dresses and bakes pies for the man and his son, and we follow the man on his daily rounds, getting his son out of bed and off to the school bus, fielding a call from the polite but increasingly insistent bank manager, putting his foot through a rotten step on the porch, fixing the widower’s toilet and getting a cherry pie in return, working a long shift and managing to keep up a kind of empty good cheer, being helped with his groceries by an attractive woman whom he ignores, that’s because he is too pure at heart to notice when someone is trying to get his attention, being greeted at a stoplight by an old pal who wants to go drinking, and telling him he’s been on the wagon three years and sorry, he’s just not ready for that scene, and his friend shrugs and shakes his head and drives off, and he’s home in time to see his son get dropped off by the school bus and tell him a great joke the son’s heard before but the son laughs anyway because he loves his dad and his dad’s all he’s got and they both know it and the man ruffles his son’s hair and picks him up and carries him on his shoulders all the way up the hill to their house, where he waves at the widower next door and steps carefully over the broken step and deftly stoops to pick up a menacing letter left by the bank on his way in to make their dinner of hot dogs, instant rice, canned peas, and cherry pie. It’s a totally normal kind of life and there isn’t much in his story except love and an attractive quiet despair, until one day he has to slam on the brakes to avoid hitting a young woman who has dropped a valise full of papers in the road because she was trying to cross the street while she was talking on her phone and also craning her neck to figure out where she was because she had just arrived from the big city where she is a lawyer, and when he gets out of his pickup truck to help her their eyes meet and the plot spins into motion and you know he will be silent about his family tragedy and she’ll be condescending about the little town that she’ll just be itching to get away from until finally his son will confide to her about how his mother died in a car accident, and how her car went straight into a frozen lake, and broke the ice in a perfect circle and sank right away and the hole froze over just like that and she never came out but when he was standing on the shore with his father and Ed the policeman a seagull flew over the place, and now a seagull comes and sits in the school playground every day and does she think it might be the spirit of his mother because he really hopes it is and the lawyer will tear up and look over her shoulder to the kitchenette where the father will be opening a can of peas for them and not noticing the oven is smoking and the pot is boiling over, and that’ll be it, she’ll realize her life in the big city is empty and she needs a real family, like right away, and they’ll sleep together that night and the next day the boy will be eating his cereal and she’ll appear in one of his father’s shirts and she’ll ruffle his hair and he will smile really broadly because kids always know and she’ll get dressed and get in her rented Lexus to go back to the big city to quit her job and get her belongings and the father and son will wave at her and she’ll drive away and skid off the road and crash into the lake breaking the ice in a perfect circle and the car will sink almost instantly, and there won’t be anything but bubbles and a seagull flying by.

I arrived at the Yellow Hat at 12:13. I made a point of checking the clock so Catherine could see I realized what I’d done.

— Sorry, I said, I’ve been preoccupied.

­— With yourself, she said.

­— I would just like to find a story that is like mine.

— Not a big surprise. You test drinking water for the city, it’s not exactly front page news. No one’s going to make a movie about it.

— You know everyone’s supposed to have a story.

— You’re a big baby. You’re privileged, you’re on your own, you have nothing better to do. You’re upset because you’re not a magnetic genius or the dictator of some minor country.

Catherine is sixty something, oldest of the staff in the Water Department. I’ve liked her from the beginning.2 Acid foams in her heart. I have no doubt she could commit terrible acts. She is forever picking fights with Agathe. I can picture Catherine spitting in Agathe’s face. I can picture her sawing up Agathe with a serrated steak knife, not blinking when her eyes get sprayed with blood. Her dislike of nearly everything Agathe does is not hard to understand. Agathe is the perfect professional, and Catherine finds that sort of perfection insincere and therefore intensely annoying. Or François: I imagine her slashing away at him, just to cut his perfectly sculpted body. She has nothing against him, at least that I know of, but it is hard to imagine she’s not infuriated by his vanity.

I also like Catherine’s meandering way of walking, which I find endearing. It looks like she is continually forgetting and remembering. One afternoon shortly after I was hired, I was walking home along Lorck Street and I saw her up ahead by a couple hundred feet, on her way to the eastbound bus. She paused. Then she walked a few more steps and turned part way around. I just about shouted hello, but then she kept going. She rummaged in her jacket pocket, stopped again, felt for something in her bag, walked three steps, and clapped her hands. She was talking to herself. I realized it wouldn’t be good to be discovered observing her, so I slowed down. She went on, walking at the pace of a child, veering toward the left edge of the sidewalk and then toward the right. At one point she stopped and held her arms out as if she was demonstrating the size of a fish.

Sometime later I discovered that walking with Catherine is a pleasure, because her odd way of moving expresses her discontented thinking. She’s full of stories about her travels, which I like even though they never make sense to me. As she talks, her mind turns this way and that, and she turns with her thoughts, and she walks where she turns, naturally, unselfconsciously. Occasionally she corrects herself to accommodate the unwelcome interruption of a light pole or a wall, all the while making sweeping gestures and showing an imperial lack of concern, as if she is a duchess fallen on hard times, reminiscing about the kingdom she feels must still be hers.

In the last couple years she’s been in pain, something to do with her spine, and as a result her meandering style of walking, which had once been so endearing, is punctuated with twitches. She swings sideways with each step and hobbles instead of gliding. We all know she’s in discomfort, but it is hard to tell what she’s really feeling. Pain and pride are very tightly bound in her.

That day she was sitting back, impassive, grimacing slightly while I complained.

— Look, I said, there are lots of stories about ordinary people. How come I can’t find one that’s like my life?

— Because you’re an idiot. This is real ordinary life, not scripted ordinary life.

— Oh, I said, you mean like when a boy, let’s call him Sam, has an idyllic first few years in a lower middle-class home in a rural community in, oh let’s say, New York State, and he spends his time doing entirely ordiary things like playing by a muddy pond and climbing trees and running through fields and everything’s normal by postwar American standards until he’s five and a half, when his father dies suddenly and the family doesn’t grieve because the boy’s mother is such a psycho she just pretends the father never existed, and she spends her time reading books about mushrooms and astronomy, her two favorite things, actually the only things in the world she really enjoys, I know, it’s weird, don’t ask me about it now, but anyway when she is studying mushrooms or plotting the orbits of comets she lets her sons do whatever they want, and that plunges poor little Sam into this weird limbo of fantasies, because he’s on his own playing outdoors, and that is basically not healthy, even though it sounds natural and lovely and all that, but it’s just not, and so when he grows up he gets himself in a big stew of confusion, and he runs to his so-called friend, let’s just go ahead and call her Catherine, and he spills his heart out to her—

— That was your heart?

— And she tells him to stop his tedious lame introspection and get on with his typical insignificant life, you mean like that?

She looked at the ceiling. She does that when she thinks the person who’s talking to her doesn’t deserve an answer, which is exactly what my mother used to do, which is one of the problems with having Catherine as a friend, if you can call someone that rude a friend.

— You know, Samuel, you don’t have to tend your little hurt garden. You don’t need to prune your neurosis roses or trim your bonsai trees of despair. You’re normal, that’s all. Buckle in for your normal life.

— So there’s no problem having no story.

— No problem having no story worth telling. Mine isn’t, at least it seems it isn’t, because you’ve never asked.

I had, of course, but was unrewarding. Each time she comes out with something different. “I was in Argentina in 1970,” she’ll say, or, “well, there was that time in Bolivia,” or, once, “I left Kazakhstan in November, 1977,” and then she’ll start some more or less unbelievable story, like, “the currency was suddenly worthless and we were all trapped,” or “when the salt flats were flooded, I tried calling Anneliese, but the lines were down,” or, in the case of Kazakhstan, “there were no more horses available, so there was no way to cross the Saryarka plains.” Her stories are hard to follow, especially because she usually tells more than one at once. They often end badly for other people. “I couldn’t repay Leandro Abeloff, so we had him arrested,” she’ll say, about her time in Argentina, or “Guayacolino, the Bolivian Transport Minister, was later assaulted by three men and beaten very badly,” or, for Kazakhstan, “they went back to get the man who sold me the horse, his name was Pezhinsky, and the next day one of them came to see me at the hotel and told me Pezhinsky would never bother me, or anyone else, ever again.” It isn’t easy to know how many of her stories are true, although it seems they couldn’t be wholly false, because they are full of dates and places and strange names.

It doesn’t really matter that I don’t listen, because her main point is usually that people are disorganized and stupid. At first I used to ask about her stories, because I thought it was the polite thing to do. I’d ask, “What kind of business was that in Argentina?” or “What brought you to the salt flats in Bolivia?” or “You were in Kazakhstan an entire year?” but she’d say something like “It wasn’t really a business,” or “The pipe organ company sent me there,” or, for Kazakhstan, “I was there almost a year, but I’ve been here over twenty years, how amazing is that?” Once, I told her I thought she must have had a previous career as a spy, and she looked at me like I was a child. “That’s right, Samuel,” she said, “the only reason women go anywhere other than work and home is if they are international people of intrigue,” but then she went on about how Leandro had been hired by her bank to get her to pay, or how quickly she got a premium berth in the train after Guayacolino was assaulted, or how she could never get another visa to Kazakhstan after that business with Pezhinsky.

Her stories are mostly about travel. In the two decades she’s been working at the Water Department, she’s never told me anything about her life in Guelph. She’s never mentioned a partner or invited anyone to her house, which is somewhere on the east side of town. Rosie said she saw Catherine once in Stone Road Mall arm in arm with a gray-haired man, but that could have been anyone. I guess everyone guesses she is solitary, and that is that.3

You have to feel sorry for her. I humor her provocative remarks and pretend not to be hurt by her sarcasms. Her rebarbative way of talking hides her unhappiness, and I actually love that in her, because she knows it about herself. She has nearly disappeared into her tightly bound, pincushiony self, but you can still see her in there, like a boneless sea urchin cowering inside its ferocious armor.4

— Most people are like the goop people used to put on their keyboard to clean it, she told me. It oozes under the keys and picks up all the gunk. Most people’s lives just mold themselves to whatever’s around, and they pick up whatever gunk is around. When the goop is finished you pull it up very gently and mush it back into a ball of goop and dirt and hair and skin cells. And then you throw it out. That’s life for people with no qualities.

She smirked. It’s something she does when she amuses herself.5

As I walked back from the Yellow Hat I thought, The only thing I know for sure about my life is that there won’t be any portals. It’s one thing to realize you’ve been wandering in a forest. It’s another to write your way out by inventing a portal. My life isn’t a postmodern version of Dante. It isn’t about the usual things like money, sex, religion, justice, ethnicity, art, or politics. It’s about love, of course, whose life isn’t, but probably not in any interesting way. Despite what Catherine thinks, it isn’t yet another story about a white guy wishing he had an exciting life. Whatever my life is, it isn’t those things. The reason to be perplexed about it is that it isn’t.

I considered these ideas the way a child looks at colored pebbles it has picked up on the beach. I was happy to have them. I supposed they might be significant. Like a child, I turned them around in my mind. They reminded me that little Sam once had a collection of minerals. He used to pick them up one by one and show them to his mother. “That pebble is Magnetite,” she’d say, or, “That one is Tourmaline.” Little Sam didn’t know the words, but he played at knowing. This pebble is Magalon, he’d say, showing it to an imaginary little girl, who’d be full of wonder and appreciation. And this one is Touraleen.

The world is what it is, that’s what I think. That probably isn’t a profound thought, and it’s not especially comforting, but it doesn’t seem wrong. Adela is who she is: hard to imagine how that couldn’t be true. It sounds sensible and modest. In fact it is a lovely idea. A person’s life is simply what it is. As an idea, that is decidedly more beautiful than Hey, Samuel, your wife has left you, or, Guess what, Samuel? You’re actually psychotic, you’ve repressed so much that nothing’s left. Did you notice you believe your childhood is picture of a cloud?

I haven’t been thinking especially clearly, I know that. Yet the feeling of not thinking clearly enough to come to conclusions is calming and probably harmless. I have decided to step back and watch my life the way little Sam watched the sky, the way he regarded his collection of stones. I am going to try to relax my interest in analyzing things, which I have inherited from my mother, because it is intensive and exhausting and quite possibly pathological. Often it’s best just to keep an eye on things that don’t quite make sense, the way you might watch a man on the other side of the street who is waving his arms and shouting. You go on with your business, but you keep him in the corner of your eye. If he yells something about amoebas in drinking water you’ll know something isn’t right, because people who scream things on street corners don’t usually know about amoebas.

It’s possible that wandering in forests as dark as the ocean is about all there is. Dante was really frightened of the woods. He wanted to get the hell out, even if it meant doing very dangerous things like climbing onto Satan’s scrotum. He could have died in the forest, that was scary enough, but not as frightening as dying without a good story. Forests are frightening for poets because not much happens in them. You can scare yourself about bears and wolves if you want, and you can imagine werewolves and moth men or dryads and demons and witches or Leshy who sings and laughs in Scandinavian forests or the Huorns in Tolkien or the Children of the Forest in *Game of Thrones* or flesh-eating viruses like in *Cabin Fever* or backwoods psychopaths like in *Deliverance* or *The Cabin* or *Cabin in the Woods* or *The Blair Witch Project* or *The Ritual* or *Last House in the Woods* or *Wilderness* or *Hidden in the Woods* or *Don’t Go In The Woods* or just *The Forest*. But if you actually spend time in the woods like I did when I was a child, you know that even if you get lost, it’s likely nothing much will happen. You might wander for a few hours down a trail, say, into a ravine. It might be nice and cool in the shade. You may wonder when the trail will go back uphill, but you won’t really mind. You may spot a curious mushroom the color of egg yolk, growing by itself at the base of an old tree, like one I saw once when I was little Sam and I’d gotten lost. Strange, you’ll think, there aren’t any others nearby. And later, after the trail has led you up out of the ravine and shafts of sunlight have warmed your cheek, you may stumble and look down and there will be a tiny enamel-blue mushroom, growing by itself in the leaf litter. There won’t be any connection between the two, and there won’t be any significance to the fact that this one is blue and the other is yellow, and there won’t be much of a story in it, as you’ll discover when you find your way back and try to tell your mother about it, but that’s ordinary, nearly random, nearly meaningless life.

We all wander through our lives, this is what I tell myself. None of us knows where we are, really. Maybe we start out playing in ponds and fields, but then we stray. Our paths are patternless. People come together, then fall apart. Luckily most things that happen don’t matter.

The big things, on the other hand, mean too much. We can’t look at them directly, we can’t hope to understand them. We can’t even really bear to think about them. Stories distract us, but they aren’t good for us. They are like illnesses, and the cure is knowing that most things don’t actually have meaning.

**<Chapter 7 A Pleasant Conversation>**

The following Wednesday I had to come in early, beause a woman named Pistouriec had sent an application to the Water Department, which wasn’t hiring, and in support she’d included two papers she’d written, which I had forgotten to read. After that came the weekly lunch with Catherine, and another lab. When I got in, I put my coat on the lab desk as a pillow, crossed my arms over it, slumped forward, and closed my eyes.

The phone rang. It was Rosie.

— Samuel, there is a young person to see you.

I liked that she said Samuel, but I noted she said “person” slowly, breaking it into two parts.

— Isn’t it early?

— Sorry, Samuel, she said, in a lovely comforting voice.

According to the application, Viperine Pistouriec had been born in Moulins and gone to college in Paris and later at Fairleigh Dickinson University. She lived on Prospect Place in Brooklyn. One of her essays was titled “Coprophagic Habits of Captive Orangutans (*Pongo pygmaeus*)” and the other was “Paraphilia in Captive Orangutans (*Pongo pygmaeus*).” Both were copied from the *Zoo Prospect*, a newsletter put out by the Prospect Park Zoo. Pistouriec sounded Romanian. Maybe it meant fisherman, like Pescatore. Or maybe it was derived from a place name, something like Pisto or Pistour. And Viperine, that was a strange name. It didn’t sound real. Sounded like viperous, or vituperative. Or wolverine.

I put a drop of water from another sample bottle on a slide and scanned back and forth, up and down. Ash, bacteria, pieces of microplastic. No amoebas.

Viperine came into the lab without knocking. He turned out to be a thin, tallish, weak-looking boy in his late twenties. He was wearing black dress pants and a pressed white shirt under a bright green cardigan, the sort coddled children are given by their grandmothers. He offered me one of the frailest handshakes I’ve ever felt. His hand was liquescent. After the initial palm-to-palm contact, the thumb dropped down and his four fingers slid out of my hand.

— Well, I said.

I gestured to a chair.

— Thank you, I’m glad to meet you, he replied in a shockingly sweet and definitely female voice.

— It’s an unusual name, Viperine.

— At first I thought of Hostiline, he said in a single soft breath.

Viperine was playing with gender—a girl posing as a shy boy, hiding behind a schoolboy’s outfit.

— You’ve given up your given name.

— Well, what’s in a name?

Viperine looked down into the contents of her, or his, shoulder bag, which was pale leather with small brass fittings: slightly effeminate, marginally masculine.

— You know we’re not hiring?

— I would like to join your lab classes, if that is permitted, and see how things go.

Viperine retrieved a pencil and a small pad of paper ruled in a pale gray grid.

— You can, I said, they’re open. There’s a registration fee.

For some reason Viperine took a note of that. The silence was softened by the sound of her pencil and the shuffling of her cardigan.

— Your two papers are on somewhat unpleasant subjects.

— Hmm, she said, with a little jet of breath.

— Eating feces.

— It is recorded in a number of mammal species, Viperine said, especially dogs. I am sure you know all about that.

Her eyes twinkled.

A ridiculous challenge, a preposterous person, an incredible name. I revised my theory again: this Viperine must be a practical joke. He was just waiting to be called out. Catherine would do a thing like that.

— Well, I said, I know rabbits do it, because it lets them ingest nutrients that their intestinal bacteria have produced during digestion. I learned that when I had a pet rabbit. But I assume it is a deviant behavior in primates.

— Mm, that depends entirely on what you mean by “deviant.”

— Outside the range of normative behaviors?

— Perhaps, but who is to say?

— What do you mean, who is to say? A behavior either is or isn’t in the spectrum of normative behaviors for a species. Rabbits require the byproducts of bacterial digestion, which they find in their own droppings. Rats eat their own feces too, I think.

Viperine seemed delighted by that.

— Yes. Up to fifty percent of their own feces!

— So those are normative behaviors, necessary for nutrition and health.

Viperine nodded with his eyes closed, as if I’d mentioned old friends he didn’t want to remember. Then he fixed me with a glassy stare.

— What about bitches, who sometimes eat all of their puppies’ excrement for the first week of their lives? I suppose that’s necessary?

He was practically hissing, as if he was repulsed by his own research.

— And what about foals, who eat feces for up to four months after they’re born? They prefer their mothers’ feces to their fathers’ feces, did you know that? And why eat your parents’ feces at all?

I really don’t know, Viperine, I said, trying on the name. It sounded fun, like talking to a superhero.

— It isn’t known, Doctor Emmer, because there isn’t anything to know. The bitch would survive without eating her puppies’ poop, and foals can live on their mother’s milk without also eating their mother’s patties. There is no reason for it. It is not for health or survival. There is no evolutionary pressure for bitches to slurp their puppies’ crap. Darwin isn’t standing over them, saying, Eat shit, little bitches! Eat and live!

Amazing, I thought, this conversation is actually scripted. Catherine must have anticipated my examples. She must have hired Viperine and rehearsed the whole thing.

— Some dogs eat cat shit, she continued. Others eat horse droppings. All dogs smell feces, and some go ahead and taste the feces. It appears to be a choice. A preference, an option. They like the smell. Some dogs are particularly attracted to frozen feces. They may prefer a firm crunchy texture to the warmth of steamy fresh feces. They prefer their feces hard and well-formed, not soft and pliant.

Viperine’s eyes were gleaming.

— That’s nice. So it’s deviant behavior in dogs, because it’s not necessary for survival.

I rotated the Fina ring, shifting the view. Tiny round cocci bacteria trembled in pockets of slime. They looked like pimples. There was black grit everywhere.

— Oh, sorry, I have to disagree. The behavior in the orangs I studied in Prospect Park is not “deviant” simply because they don’t need to eat their own shit to stay alive. What’s the point of calling it deviant, anyway? What is deviant?

I stared at him a second too long. He wasn’t acting, he was angry. Either that, or he was a world-class actor.

— Doctor Emmer, what is deviant?

I looked at my left index finger. A big drop of blood had congealed over the scrape.

— Whatever’s outside the range of normative behaviors.

— Hmm, well, for me, in my own personal experience…

I thought, okay, here we go, here comes the confession. It’s all a joke, Catherine’s waiting in the hall.

— Orangs eat their own poop, period.

He gave me a matter-of-fact look.

— It is normative, Doctor Emmer. It is a choice, it does not help them stay alive. It may even make them sick. It occasionally makes me sick to watch it.

Viperine glared at me like a sulking child who has just thought of something really hurtful to say.

— Doctor Emmer, it does not help to call their habit “deviant” just because you don’t like it. I don’t know how many times—well, actually, I do know how many times, it’s in my notes—but lots of times I have watched our orangs defecate, and then take a couple of fat-ass waddly steps, still crouching, and turn around, and stick their middle finger in the poop, and lick their finger, and stick their finger in again, and lick their finger, and even scrape their finger around afterward to get up the last bit. As a biologist—at least I mean I want to become a biologist—I can only watch and record. I cannot say what is deviant, I just can’t. I will not say what is deviant.

In another place there were white blobs, possibly amoeba cysts. One was shaking violently. At the top was a single bacillus, like a stick except that it undulated.

He wrote something in his notebook. If he or she was real, if this wasn’t a joke, then whoever she was, whatever he was, was just too weird for the little group of interns who came every week to study for the Certificate in Water Management. On the other hand if Viperine was one of Catherine’s jokes, then she’d really chosen someone certifiable.

At that moment, writing very small notes with a very tense hand, breathing hard from his little speech, he seemed wholly genuine. What was he writing? “Emmer is an idiot. Does not understand me.” Or maybe: “Irrational fear of defecation.” Or: “Symptoms showing. Need to increase dosage.”

He put a yellow ribbon in the page and closed the notebook.

— I concluded that eating excrement is statistically uniform with the consensus idea of normal orangutan behavior. I use the standardized indicators from the Harzman and Thorpe Orangutan Behavioral Palette. Coprophagy cannot be distinguished from those indicators either in frequency or distribution, according to my study.5

— I see.

— So it is not “deviant,” he said, making exaggerated curly-finger quotes at me as if he wanted to claw my cheeks.

— Fine.

— I have written Harzman and Thorpe to tell them.

— Great.

— Six times.

— Okay. It’s not really pertinent to our lab anyway. And what is paraphilia, in your other paper?

He leaned back in the chair, legs stretched somewhere under my desk.

— It means sexual obsession with an object other than the species-specific mate. Anytime you desire something, anytime you want to mate with an object other than a phenotypically normal, consenting conspecific partner, well, that is paraphilia.

She was vamping Marilyn Monroe, mouth open, lips slack.

— If you also want love from that creature, and not just sex, then that’s zoophilia. Zoophilia and paraphilia are usually used to describe things that happen to people. People who want sex from horses, etcetera, or they want their horses to really love them. But it is prejudiced to think that we’re the only species that gets to feel those things. It could just as easily be animals desiring other non-conspecific animals, or even desiring people.

She puffed out her lips and raised her eyebrows like Marlene Dietrich.

— For example, a male polar bear in our zoo became obsessed with a fiberglass and foam core water toy. The toy was big and white, and about the size of the polar bear. It was rectangular, with soft corners and large perforations in its sides. At first, the bear used to swim with it, and dunk it affectionately underwater. Then it began hugging the toy, and finally it attempted to mate with it. At that point the veterinarian took the toy away. He said the bear was disturbing children. The bear mated with its toy all day long, and when it was fucking its toy, the bear and the toy sank slowly to the bottom of the water feature. The perforations in the toy were somewhat too large, and the toy was difficult for the bear to hold, so it was awkward. That did not look good to the children watching through the underwater ports.

— I can imagine.

— Yes, I see that you can. Paraphilia is commonly encountered in multiple-species displays. Zebras have attempted to mate with Przewalski’s horses, anteaters with prairie hens, hippopotami with manatees, etcetera. And I’m sure you know that study about the signing female chimpanzee, who masturbated to pictures in *Playgirl* magazine.

— Nope.

— From my point of view paraphilia and zoophilia are normal-spectrum behaviors, and should not be controlled. If children go to zoos, they should be prepared to witness polar bears fucking the orifices or—and here she sucked in her cheeks like Marlene—the protuberances of their toys. I told my supervisor we should purchase a sex toy for our polar bear that has smaller orifices, so our bear could be more easily satisfied.

It occurred to me then that Catherine might not have planned this after all, because she knows I can’t be so easily shocked. But why would anyone want to be so unpleasant? And why go on about these things for a position in a Water Department class?

Viperine took out her notebook again. I turned the Fina ring. It didn’t look like there were any amoebas left alive in the sample.

The eye-shaped blobs and some darker ones could be amoeba cysts. This sample was more nearly dead than the other. Only a few of the tiny cocci were still moving.

— My research in that essay focuses on the orangs we have in Prospect Park, she said. I am interested in their compulsive attractions. Last year we tried an immersive multi-species environment with our orangs. One young male named Shellfish fixated on a female Argus pheasant and followed her around. I think he would have attempted to mate if the pheasant had given him a chance. A female named Priscilla exposed herself to a Malaysian giant turtle. Whenever the turtle extended its head, Priscilla turned around and displayed herself. Another orang named Chuck found a stick that he licked and sucked for hours on end, as if the stick were a penis. My supervisor separated Shellfish and Chuck from the creatures they desired. I told him there was no need to do that. I said the Argus pheasant can take care of herself. Priscilla isn’t harming the turtle, I said, the turtle probably doesn’t even know what an orangutan vulva looks like. Besides, I said, those animals live together in the wild. The jungle is full of non-conspecific species exposing themselves to each other. I also pointed out that many children see adults walking around naked.

— Those adults would not normally be trying to mate with the children.

— Maybe not.

— And most adults try not to fellate sticks when kids are around.

— Fine. But what—she whispered, leaning forward and putting both her soft hands flat on the desktop as if she was going to swim over to me—what exactly is wrong with any of this?6

Her fingernails were trimmed into perfect ovals and painted with clear gloss.

— Customer relations?

— The beta male, the one who eats the shit produced by his females, sits in an inferior position in their tiered concrete house. He shepherds his piles of female feces and samples them one after another, the way a love-sick young man might stroke locks of hair or some other keepsake of the women he admires.

I looked at the clock.

— Well, Viperine, I said, this is interesting, but...

She stood up suddenly and shook my hand, this time vigorously. Again thought he must be a boy. I pictured his mother, back in Moulins, giving him etiquette lessons.

— Always stand promptly when the meeting is over, his mother would say, and little Viperine would spring up like a push puppet when you let go of the button in the base.

— Thank you ever so much Doctor Emmer, he said, in a decidedly male voice. I look forward to contributing to the Water Department Certificate class.

— We meet in an hour and a half, I said. You can sit in.

— Hm, he said, as if he’d been insulted. Then he left, walking quickly but fluidly. When the door closed I realized I was both irritated and tired. It was as if someone had been brushing my hair the wrong way.

For several minutes I stared at the microscope screen as the water drifted slowly upward or sideways. It was evaporating. In another twenty minutes the last remaning bacteria would encyst or die.

There were a few things left alive in the sample, faint light gray spots. They jerked and vibrated. The water gelled around them, attracted to the last bits of life. Dark microparticles of effluent were everywhere. Probably corrosion products, fuel crud, bits of insulation. Agathe’s analysis would show up inorganic chemicals of all sorts, sulfates, boron, lithium.

Down there, at the limits of resolution, the microscope missed so much. The tiny bacteria were like galaxies at the end of the universe, blurry even in the largest telescopes. They showed as soft specks, but actually they were hairy creatures, protected by coats of protein, and all around them, everywhere, invisible to my microscope, were viruses. A beautful world in its way. Quiet and getting quieter. All the larger creatures had died. Now it was time for the littlest.

**<Chapter 8 The Little Boat of the Mind, Sailing>**

— Who is Viperine? I asked Catherine, as soon as I sat down.

— A potential intern. He wants to work with you.

— I don’t need an intern.

— You might.

— I don’t.

— You will.

— Her research is creepy, and it has nothing to do with water treatment.

— I didn’t notice. And he is a boy, not a girl.

— How did she hear about us? Does she live here?

— He is a boy, Samuel.

Catherine carefully unwrapped her tuna salad sandwich, pressing the wax paper so it lay flat on the plastic tray.

— Want to get something to eat? You’ll be hungry in the lab.

I rushed over to the buffet counter and grabbed a tub of vanilla custard and an orange Jell-O, because I’d always liked Jell-O okay, and also because I didn’t want to spend time searching for anything better. I retrieved a bottle of water from the cafeteria’s enormous ice bucket. That little gob in Catherine’s brain observed my choices and the cowardly reasons for them. A minuscule part inside the little gob in her brain would eventually communicate that information to the speech centers of her brain, and sooner or later, preferably much later, I would be the apparently grateful recipient of an exhausting disquisition anatomizing my pusillanimous and misguided actions at the buffet.

— I’m still thinking about my life.

— Oh, no.

She adjusted her paper napkin until its sides were parallel to her cafeteria tray, which she’d nudged into parallel with the table, at least to within a couple of millimeters per foot of tray edge.

— My brother Tee goes everywhere and meets everyone. People like us don’t. We have routines. For example every weekday you go to the Harris plant and then back to your apartment—

— My house.

— And every couple days you come over to the Water Department.

— I live in a house, not that you care.

— And to the grocery.

— Correct, I use a Loblaw’s and a Metro.

— And City Hall, right?

— Increasingly.

— And here.

— See? As far as you know, my paths are quite simple.

She shook her head as if I was an ant clinging to her nose.

— Tee’s life path is like a net cast over the whole Earth. Yours is whatever yours is. Mine has stalled. I did some exploring when I was younger, but then I settled.

— Really, Samuel, what is your major maladjustment? None of us is going anywhere. No one I know has a Life Path. That is pure fantasy, like Dorothy in the Wizard of Oz, where someone built a road just for her, and conveniently started it right where she was standing. Or Jacob, in the Bible, there just happened to be a ladder right next to his pillow. The top was set onto the clouds, and angels climbed up and down. It was a commuter ladder to heaven. Those people are special. We aren’t.

— And Adela, she’s found some path. I don’t know what it is.

— People don’t have Paths with a capital P. Animals have paths. They go from place to place looking for food and shelter. It’s no great thing to have a path.

— Well, Adela has gone off somewhere, heading away, into space.

— Sorry, Catherine said. Have some of your Jell-O.

Somewhere deep in her midbrain, in a neuronal complex surrounded by inert ganglia, was a lovely teaspoon of brain matter that spent its time thinking carefully and generously about other people. Perhaps that little brain bit felt lonely in there.

I looked at her with an expression I hoped seemed unguarded, because that was how I felt. Then I had a sudden idea.

— Maybe you have to keep moving in order not to be lost, even though you risk being lost when you travel, because if you keep still that’s when you can really become lost, because you lose yourself, even though you’re right there.

She folded her napkin in half four times, until it was the size of a doll’s diary, and pressed it savagely with her thumbnail to make it lie flat.

— I have no idea what that is supposed to mean.

— Well, does your life make sense? Back and forth from your house to work? No more adventures in Kyrgyzstan?

— That doesn’t strike you as just a little rude? “Hey, Catherine, old buddy, I like you and everything, but I’m just sort of wondering: Do you think your life makes any sense at all? Because none of us think it does. Just asking.” You know something? You’re a big baby.

Talking with Catherine was like jousting with pins: you stick the other person, and she pricks you, and you go back and forth like that until one of you says, Fuck this.1

From her point of view small triumphs aren’t just part of what happens in conversation, they are all of it, capable of carrying all the nuances of friendship. Or at least all that she is willing to admit. She understands people’s supposedly secret motives better than they themselves do, but she’s helpless as a kitten in a swimming pool when it comes to something as unquantifiable and friendly as the smile I was now offering her.

— Babies crawl everywhere, just like me.

— See? No harm in being lost.

We went on talking, amiably and aimlessly, with her making fun of things I said, for another half hour. I didn’t eat the Jell-O or the vanilla custard, which conveyed the message that it wouldn’t be rewarding to diagnose my choices at next week’s lunch, because I had already realized what I’d done.

After lunch we went off in separate directions, as we always did. I had to get ready for the lab class, and she was headed to some miasma of blocked sewer pipes or infected settling tanks.

If I kept her on the topic, she might eventually come up with one of her sarcastic, piercingly accurate diagnoses of my condition, something I could really use once I recovered from the sting. This time next week, I thought, I might actually have an idea about what what path my life is on, provided I can disentangle whatever she says from her poisonous motives. On the other hand, I decided, maybe I should ask someone else, some higher authority on the purposes of life.

Why not ask God? I thought. Lots of people do.

I imagined it was the sixth day of creation in heaven. The newly minted sun was setting. God was almost finished. He’d created the world and every soul in it, and he was justifiably proud of what he’d done.

— This is great, he said to himself, and then he said it again to some angels who were nearby. They applauded politely.

— Everyone has a place in the world, God continued, a bevy of friends, a person to love, and work to do. Everyone has a life story, a beautiful arc that rises like a rainbow from their idyllic childhood to the apex of their strength, and then declines gracefully in rainbow colors to their perfect end.

The angels applauded more vigorously. One said God’s turns of phrase were quite good, except maybe that bit about a rainbow having rainbow colors, which was repetitive.

God gave the angel a little slap, and it hurtled down into the abyss.

— Well, he said, it’s all parceled out: a remarkable piece of administrative brilliance!

The remaining angels agreed. The box of people parts was nearly empty. God rummaged around the bottom of the box.

— Hmm, he said, let’s see what’s left: COMET, AMOEBA, MICROSCOPE, GUELPH MUNICIPAL WATER DEPARTMENT.

He frowned, and the angels ducked for cover.

— For Heaven’s sake, he said. These don’t add up to much. But what choice do I have? Best to glue them together and see what happens.

Maybe that was the reason my career had careened from the glowing promise of a new family to the lowering sky of a solitary midlife. Or why I spent time daydreaming about a childhood so far away that I couldn’t even picture the boy who’d experienced it.

To explain my life, I decided, I’ll need to find some tremendous authority. Not God, he’d done his best with what he had. Certainly not that poet who wrote about heaven and hell, he was lost before he even started. More like a great philosopher with ferocious eyebrows and a bristling beard, and a name with lots of z’s and ü’s and a couple of š’s, like Friedrich von Zwiššer-Szüthel. Or even better, the three Fates in Greek mythology, they were the ultimate authorities on everything. The Greeks said they were older than the gods themselves, and there wasn’t anything they didn’t know. The three Fates determined everyone’s lives. They were from back before people began to make sense. They were old when humans were still skittering around picking berries and running from drooling mammoths. The three Fates are chthonic, they cling like grubs to the roots of the ancient tree of culture.

I could conjure them like Greek priestesses used to do. I’d whisper a secret sentence, perfectly pronounced of course in archaic Greek, and in a whoosh of colored smoke there she’d be: the first Fate, Clotho, the one who spins the thread of life. She’d be ancient in a timeless kind of way, with tens of thousands of minuscule wrinkles, so her face looked like a fingerprint. She’d be working away at her spinning wheel, winding fresh twine neatly onto a card.

— Excuse me, I’d say, you might not know me. I’m Doctor Samuel Emmer.

She wouldn’t answer.

— I suppose you don’t remember everyone, I’d say encouragingly. Or do you?

Silence.

— Anyway, I’d continue, as long as I’m here, if you don’t mind my asking, can you just tell me what was the idea, exactly, of spinning the thread for my life in particular?

She’d just keep at her carding as if I wasn’t there.

— What I mean is, I just want to know what you had in mind for me, with my thread in particular.

Still no answer.

I’d cross my arms and raise my voice.

— Is that really necessary? I’d ask, pointing at the balls of wool and spinning wheel. I mean, why bother? Why not take it easy for a while? Aren’t there enough confused, unhappy people in the world?

She’d never answer, of course, because from her point of view I was just a piece of string. And besides, she probably didn’t have any good reasons for what she did. She probably just really liked string, because after all she was always making more of it.

So then I’d go over and talk to Lachesis, the second Fate, the one who spools out the line of your life. She’d be nicer looking, like someone’s friendly grandmother. There she’d be, measuring out an arm’s length of string for me, and then another arm’s length, and another, and she’d be letting it all fall at her feet. I’d watch a while, and then I’d put my hand over hers.

— Hold on there a minute, Lachesis dear, I’d say, watch what you’re doing. My thread’s all tangled! Would you mind being a bit more careful? How can I make sense of my life when it’s all in a knot?

Lachesis looked nice, but she was a nasty piece of work and probably enjoyed messing up people’s lives for no reason. She’d shoot me a glance and then she’d mash my thread under her foot.

It would probably be smarter to be polite.

— Here’s an idea, I’d say. The thread of my life might form a beautiful tapestry. I was kind of hoping everything would come together and make a pattern. The way I see it, the tapestry could be sewn in lovely pinks and oranges, maybe enlivened with some flashes of gold. My entire life in one picture, one thread for each day I spent with Adela, another for every amoeba I’ve ever seen, all knotted into an intricate and unexpectedly familiar pattern, the picture of my life! You could even give it to me, and I’ll hang it in my living room. I’ll sit by the fire and the room will glow in the warm light of my rich and profound memories, all my life’s experiences there in a gorgeous impressive display, gleaming, shimmering, unified, expressive, deeply rewarding. You know, I bet you could do a great job if you set your mind to it.

Apparently that would be the wrong thing to say, because she’d take my thread and scramble it together with Adela’s thread, then she’d pull Adela’s thread back out, but it would get stuck, and then she’d pull really hard and make a nasty little knot. It would be quite annoying to watch. Then she’d scowl at me as if to say, There, mister know-it-all, there’s the mess you’ve made of your life.

So I’d sit down at her feet and try to disentangle my thread from Adela’s. I’d pick at it and pull the threads carefully so they wouldn’t break, but it would be difficult because the Adela threads have become very thin and they break easily. There’d be a pink thread for Rosie in there too. It’d be a serious mess. I’d work a few minutes in silence. Lachesis would be on to someone else’s life, measuring out their thread. Then she’d notice me. She’d twist around and kick me in the shin. Really hard.

So I’d limp over to the last of the three Fates, Atropos, the most powerful one of all, the one who cuts the thread of your life. There she’d be, slashing away with her shears, snippets of thread falling at her feet.

She’d have a crazy smile on her face. She’d look up with a really sick expression, as if to say, You’re going to talk to me? Do you really think that’s a good idea?

At that point I’d walk away as unobtrusively as possible.

The reason I never make headway on the really big issues, I decided, is because some part of me—that would be the thinking part, because the feeling part is indisposed, and come to think of it, that’s probably the issue right there—the thinking part is forever agitating for things to make sense.

Maybe I would go consult the famous philosopher, Friedrich von Zwiššer-Szüthel, someone who knows everything that’s to be known about making sense. He’d be in his study, in his Secession style mansion in Vienna. I’d call him on the intercom and he’d buzz me in.

I’d go into the enormous courtyard and up the imperial-size staircase, all white marble. On the landing there’d be a beautifully carved wooden door, ten feet high, with iron bolts like a fortress. But the name on the buzzer wouldn’t be his. So I’d go on up. The staircase to the upper floors would be smaller, with a smooth iron rail and creaking wooden steps. It would wind up, floor after floor, because great philosophers are never easy to get to. Finally I’d arrive, huffing, at a black metal door. There’d be a buzzer with his name:

**Herr Prof. Doktor Wilh. Henricius Paulus Georg Friedr. v. Zwiššer-Szüthel, Doctor iuris, theologiae, philosophiae, paed., de rerum physiologicarum, socialium, politicarum.**

He’d buzz me in again. And there he’d be, eyebrows like feathered dinosaur tails, beard with remnants of last week’s dinners, sitting behind his enormous desk, and behind that, rising to an impossible height, a wall of books, tens of thousands of them, not a single paperback in sight. Like in Kafka, like in nightmares. The shelves would be decorated with framed diplomas: University of Valladolid, University of Siena, Università degli Studi di Napoli Federico II, Cambridge, Oxford, Bologna, Karueein, Murcia, Toulouse. And his awards: Friedrich Nietzsche Prize, Adorno Prize, Golden Eurydice Award, Berggruen Prize, Karl Jaspers Prize, Moortidevi Award. And there’d be statuettes on the shelves as well: Thoth, the inventor of writing, with the head of an ibis; the fatal Egyptian goddess Sekhmet, with a lion’s head; the dark goddess Kali, wearing a miniskirt of human forearms; Mahākāla, her husband, in a shawl of crematorium ashes; the Mesopotamian giant Humbaba, wearing his own intestines on his face; the Assyrian demon Pazuzu, grinning, with four wings, two pointing up and two down, with claws at the ends like a bat; and in between the statuettes many peculiar stones, corals, horns, medals, and amulets.

Dr. Zwiššer-Szüthel would point to a low chair in front of his desk, and I’d sit, perforated by his piercing stare, my knees nearly up to my chin, looking up over the edge of the desk.

— I understand from your letter that you are having difficulties comprehending your life, he’d say, in an otherworldly accent suspended between French, Italian, German, Basque, Finnish, and Sanskrit, with tinctures of the other fourteen languages in which he was reputedly fluent.

— Correct, I’d venture. A decade ago my life was unremarkable. But every day things become stranger.

— And you are a philosopher?

— No, I am an expert in amoebas.

— It’s no wonder you have problems.

— Amoebas have the virtue of always being lost.

— I doubt that is profound.

— Here is my problem, I’d say, clasping my arms around my knees like a child. I have lost the road of my life, and I’ve also lost track of the story about losing the road of my life.

— That may be profound. So you have lost the narrative you yourself created in order to make sense of your life.

— Actually, I have lost the point of telling myself these stories about finding the path of my life.

— Don’t get fancy.

I’d tell him about my attempts to find stories like mine.

— And this makes you?

— Anxious.

— Before you can solve a problem, you need to understand the conditions that present it to you as a problem.

He’d wait a moment so the depth and beauty of his suggestion could settle into my somewhat disadvantaged mind.

— You are not a mathematician or a logician, and you actually do not have a problem in the logical sense of that word. Like many people, you have what we call an unhappy consciousness. See Hegel, *Phenomenology of Spirit*, section 344. This prompts you to experience your state as one that is in need of resolution. See Freud, *Interpretation of Dreams*, chapter 7, section F.

— Okay, I’d say, hoping he’d explain what that was supposed to mean.

— What do you mean, “Okay”?

— Well, I do think I have problem.

I felt like saying: I have a problem understanding you, you overheated Austrian blowhard.

— Just sit and listen, and there is at least a small chance you may comprehend a simplified version of what I am telling you. You don’t have a problem, you have a state of consciousness which creates the idea of a problem in your mind. You feel you need to resolve, and then solve, the state of your consciousness. You set out to do that by rational intellection. It’s unfortunate, but most scientists think that way.

— Most rational people try to think.

— I will ignore that remark. Let me call your mental state dissatisfaction. It is a state of mind that can lead a person to perceive their actual state, the authentic mode of their existence, as a problem. Their purpose then becomes the resolution of the so-called problem. They attempt to rethink their involvement in the world. See Heidegger, *Being and Time*, chapter 3, section 18. Such people are dedicated to the problem-solving process. Involved in it, as Heidegger would prefer to say.

— So what matters is the kind of dissatisfaction I experience?

It felt a lot like being interrogated by my mother, but then again it was my fantasy, so I was probably just channeling her. Apparently I thought of her as a great professor. That was unfortunate, and I made a note to revisit it as soon as I’d finished my imaginary conversation.

— Good boy. In the beginning there is the perception of dissatisfaction, even before the perception of the existence of a problem, and well before the articulation of the problem. Dissatisfaction can be considered as cognitive conflict.

— I’m conflicted?

— Delusional, mistaking the state of dissatisfaction as the posing of a problem.

He paused an especially long time so I could appreciate the subtlety of his observation.

— Okay.

— What is this “okay”?

— Nothing, go on.

— There is nothing “okay” about an error made at such a deep level of meaning.

— I guess not.

— You suffer from the philosophic condition known as disquietude. In Spanish, you are in the state of *desasosiego*. Pessoa called it *desassossego* in Portuguese. See Pessoa, *Livro do desassossego*, passim.

— Disquiet, that sounds right.

— In German, *Unruhe*, unrest or restlessness. See Kafka, *The Metamorphosis*. He awakens from *unruhigen* dreams, troubled dreams. Restless, uneasy dreams. And guess what he discovers?

— I know, it’s gross.

— In Italian, *ansia*, it means anxiety, disquiet. See Leopardi, *l’Infinito*, where the poet thinks of the endlessness of the world, and he feels *dell’ansia d’infinito*, the anxiety of the infinite. He looks over his garden hedge and thinks of the world’s mountains and oceans, how they go on forever, into infinity, they are endless, they are meaningless. He is afraid. Chilled. He has *ansia*, *per poco il cuor non si spaura*.

— I don’t speak Italian. What should I do?

— Study Italian.

— I mean what should I do with my condition?

— In Sanskrit, it is called *uddhacca*, restlessness. *Uddhacca-kukkucca*, restlessness and remorse: a mind that cannot settle, a mind that’s agitated, a person who cannot meditate. See *Visnuddhimagga*, vol. 2, part 9, chapter 1, section 250. That is where Buddhaghosa says *uddhacca* is when the mind is like a monkey, always swinging, never able to sit still, or like water tossed by breezes, or like a flag snapping in the wind. Mindless agitation. *Uddhacca-kukkucca*, *uddhacca-kukkucca*, *uddhacca-kukkucca*, like a monkey. Or snap, snap, snap, like a flag.

— Sorry, I don’t get that.

— In Tibetan, *rgod-pa*, it also means restlessness. And also *rmugs-pa*, that is when your mind is unclear, unserviceable, incapable of correctly understanding the situation you are in. You are dense, fogged in, inert, languid, you’re sluggish, dull, your thoughts are obscure, heavy, and probably worthless. Are you even listening?

I may have been looking at the statue of Pazuzu. I recognized it from the opening scene of *The Exorcist*.

— And also *rnam-pa*, that is when your mind wanders and you’re easily distracted. You are not taking notes. Why would you come all this way and not write anything down?

— I’ll email you if I have questions.

— You will not email me. The condition you are in appears to you as a puzzle or problem in need of a solution because you spend more time thinking than you should, given your poor education, and—

— I had a good education. I went to Colgate and Emory, I have a PhD.

— That is sad. You have an absolutely rudimentary education. You probably read Freud and Kafka in English in some American college lecture class, which means you learned absolutely nothing. You don’t speak Italian. You were narrowly “trained” in a North American science program, which means you know next to nothing about science. You probably ingest an appalling diet of popular movies and television, with an occasional book intended mainly to give you something to talk about around the coffee machine at work. You probably have only a dim idea of what happened in your country before your lifetime, not to mention what happened in the many centuries and cultures of the past.

— I recognize Pazuzu.

— How nice for you. My point is that you are relatively privileged in relation to the uncountable numbers of people who are also dissatisfied or anxious about their lives. This privilege gives you the dangerous luxury of spare time, and even though you are obviously unqualified to spend time thinking about yourself or anyone else for that matter, nevertheless you fill up your empty time mulling over your supposedly unusual life, and this feeble mulling produces in your flaccid mind the malformed notion that there must be a problem, and the problem requires a solution. Is that clear enough?

— Rude enough, anyway.

— Ah, it flails out in anger.

— What?

— I will now provide you with your prescription. One moment while I retrieve the proper book.

There’d be a tall wooden ladder with wheels at the bottom, and another set of wheels at the top running in a metal track just below the ceiling. He’d roll the ladder over to one side of the study and start to climb. The ladder would squeal and shake. He’d stop to consult a large book called *Raphael, Oder Arzt-Engel*, then he’d pull out a book by Aryeh Leib ben Asher Gunzberg and stand there on his ladder giggling. Then he’d start singing.

— Sounds like a dirge, I’d say.

— *La chanson de la folle au bord de la mer.* Don’t worry, I am getting there.

At last he’d reach the top shelf of his library, where there’d be a set of thirty-seven volumes of large blue books labeled *Talmud Bavli*. He’d reach for number eighteen, but when he’d pull it, it’d stick, and then the entire thirty-seven volume set would come down. He’d fall backwards in avalanche of books, cracking his head against the corner of his desk. The statuette of Pazuzu would tip back and forth on its high shelf, and then plummet down, puncturing both his eyes with the claws at the ends of its upraised wings.

I’d run away. The great philosopher’s loyal maid would come in to see if we wanted tea, and of course she’d assume I’d killed him. She’d call the police, and I’d be caught, and go to jail, where I’d dedicate my many years of incarceration to reading all the books he’d mentioned, and of course I’d completely fail to understand them. I’d spend the remainder of my life in a state of bleary-eyed irritation.

The only thing I’d gotten out of that little fantasy was the fact that I needed to be careful to distinguish my mother from a bearded Austrian philosopher.

Maybe, I thought, I should seek out some great religious sage. After all, this path-of-life business is pretty much a religious problem. The natural thing would be a Unitarian minister: that was the church my mother used to take us to when we were kids, before she dropped the pretense of belief and revealed herself as the fuming atheist she actually was. But I needed an authority figure who wasn’t tainted by the use of any ordinary Bible-like book. I needed to consult someone like a Druid prophetess with a boa constrictor peeking out from under her hood, or a Hmong shaman who would introduce me to the frog god Nplooj Lwg, or a Parsi Zot holding a silver spoon wound around with white hair from the temple’s albino bull. A pilgrimage would be required. I could go to Shravanabelagola, the sacred Jaina city where mendicant holy men go to die. Catherine had been there. She’d seen the steep rock hills where the monks gather when they decide it is time to stop eating and drinking, when they are too weak to walk any farther. In Jainism, she’d explained, a man or woman might suddenly leave their family and go off into the world as a beggar. In that part of the world it was an event that could happen to any family.

— It would just strike someone that it was time to go, she’d said. That person would tell their family, “Sorry, it’s been a great forty years, and I love the grandkids and everything, but I’m leaving.” The newly-minted holy person would swear five allegiances to poverty and wandering, and just walk off. Great custom for people who get tired of their families.

— I suppose, I’d said.

— Like for example Adela could do it, Catherine had said, and then she added, Oh, sorry, I guess she did. And Fina too.

I didn’t react, so she’d just gone on.

— Then they’d pull out all their hair, preferably in five handfuls, one for each of the vows. If a woman was leaving her family, Jaina nuns would come and take her away. If it was a man, he’d give up all his possessions, take off everything except his underwear, and go out with just a towel and gourd to use as a begging bowl. He’d never see his family again. In the first stages the mendicant is allowed to take baths, and have a barber cut his hair, and he can eat sitting down. But once he gets accustomed to his new life, he swears another set of five vows. He gives up his underwear and even the towel. From then on he can only eat one meal a day, standing up. He has to walk at least twenty kilometers a day, and he can never stay in one place more than three days. He isn’t allowed to bathe or clean his teeth, or sit down while he eats. He has to eat out of his hands. He has to sleep on the ground. He has to pull his own hair out, including his beard, whenever it grows long enough to grab hold of. After a number of years he makes a third vow, the *santhara*, that means he is going to slowly cut down on his eating until he dies. The *santhara* takes a long time. There is a whole philosophy of it. Books have been written about it. When the mendicant gets too weak to wander, he heads to Shravanabelagola. He walks up on the rock hill and waits to die.

Catherine had been there, she’d seen the footprints they carved into the rocks to mark where people had died from *santhara*.

— It wasn’t simple fasting, she’d told me. They called it “slendering.” You were supposed to “slenderize your passions” and waste away. First the holy man can eat any vegetable he is given, then for a period just whey and milk, and finally only spiced water. In the last stages, when he can barely stay conscious, he stands *pada popa gamana*, naked like a tree, without food or water, until he dies.

I asked if that was suicide, but she said it wasn’t, because there was no passion. No anguish, no sorrow, no attachment to the world one way or the other. For years they just lived as if they had no families, no one they loved.

— Just like Adela and Fina, she added, because of course the whole point of her lecture was to needle me about my family.2

I could go to Shravanabelagola and find one of those holy men. I’d climb up the rock hill in my metal-tipped, synthetic rubber-soled, calfskin-and-leather hiking boots, that’s so I wouldn’t slip, and I’d spot one of the holy men standing like a tree, in the last stages of his life. He’d be out there, bare feet on the blazing hot stone, with an acolyte or two sitting at his feet. His skin would be burned to a crisp. He’d have that sagging belly that starving people get. He’d be absolutely filthy, with dried crusted mud on his spindly legs. I wouldn’t even see his penis in all the dirt and hair. There’d be clumps of hair on his scalp, probably because he’d lost the strength to pull out his hair. His eyes would be filmed over. A real religious virtuoso, a person whose sense of the holy would surpass anyone’s, even the painted siddhis that are all over India, or the ancient Bodhisattvas no one sees anymore, or even the great Christian Saints. A person more lost in solitude, in loneliness, than the Syrian pillar hermits, who lived on top of columns in the desert, or those Irish monks who lived on islands in the Atlantic, or those anchorites who had themselves bricked up in cells. A person whose experience of walking the earth was second to none, not even great explorers like Shackleton or Amundsen, or like Alexandra David-Néel, who walked into Lhasa back when it was a forbidden city, disguised as a man, or like Sven Hedin, the explorer of central Asia, who was given medals by a Czar, by an Emperor of Japan, by Pope Pius X, by Theodore Roosevelt, by Chiang Kai-shek, and even by Adolf Hitler, surely a list of medals no one can surpass, but still this person in front of me knew more about wandering the world than any of them.

I would have sent on a message that I was coming, so he’d be ready for my questions. My letter would’ve been polite and succinct: “I am Samuel Emmer. I live in Canada. I have lost the path of my life, and I would like your advice about how to find it. Thank you very much.” I’d have had it translated into Kannada, the Jaina holy man’s language, and stamped with the regional governor’s seal.

I’d put some ritual coconuts and bananas at his feet, even though he’d never eat them, even after I left.

— It’s an honor, I’d say, sitting down at his feet, making myself comfortable on my backpack, which would have a pillow inside it.

— As you know, I am here with a simple question.

— I greet you, Mister, he would say, in a raspy voice.

— The Master is in *santhara*, he is thinning, one of the acolytes would explain.

— I know that, I’d say, not looking at the acolyte, who was, after all, just some village kid.

The acolytes were probably be the ones who would haul his body off to the pyre and chisel the outlines of his feet into the rock. That wouldn’t pay very much.

— I will tell you a story, the Master would say, in a creaky voice. Once the great monk Santisagar was receiving blessings from the people, and he noticed a little girl. She had become separated from her mother, who was nowhere to be found. The great Santisagar looked down at the girl with pity and compassion. “Little girl,” he said, “whose child are you?” And the girl said, “I am mine.” *Mi majjhe ahe*, she said, I am my own. The great Santisagar said, “This is the true wisdom.”

— The little girl was a Master too?

— Of course not, you nut.

One of the acolytes would speak up.

— The parable means, “You find your own way.”

And the other acolyte would say,

— The parable means, “You need no guidance.”

It’d be very annoying to have gone all that way to be called a nut, but maybe it was meant in a friendly way. I’d chalk it up to the Indian English.

Then the Master would hold forth in earnest.

— Little Canadian man, I will tell you what you are itchy to know. Your letter is signed by His Honour the Regional Lord Mayor of Bengaluru, Mr Bhupinder Suresh Manjanath, Bruhat Bengaluru Mahanagara Palike, a man of infinite patience, and it is also signed in a childish scrawl by your good self, so I will make a proper answer. In the letter I read the somewhat hysterical claim that you have lost the path of your life. I assure you, you have not. Everyone of sincere intention and dedication is moving upward toward *devloka*, aspiring upward to *siddhasila*, because we are in the fifth *ara* of *avasarpini*—

— Can you spell that?

I’d be taking notes this time.

— *Ara* of *avasarpini*. Listen with your inner mind, do not write like a child. We are in a cycle of degeneration, an age of sorrow and misery. An age of religious decline. In this age, the height and shape of living beings is shrinking. We all wish to frolic like gods. We must attempt to live according to correct views, correct knowledge, and correct conduct. Even turtles know that knowledge is based on *pratyaksha*, *anumana*, and *sabda*.

— Turtles know what?

— Even turtles can be enlightened by listening to recitals of the *Tattvarthasutra*, *Parvacanasara*, *Anuyogadvarini*. They learn by *upamana*. Turtles are quite smart, my little Canadian acquaintance.

— Would you mind not talking to me as if I was a turtle?

— Not a smart turtle, a poorly turtle.

One of the acolytes would giggle.

— That’s enough, I’m going.

— I am as serious as a seizure. We all try to find the road to paradise. But it would seem that, despite the fact that we are all moving toward heaven, we move in our innate manner of turning, and so we all have differing routes of returning. The path that an individual traverses in the course of his life belongs to that person in an innate shall we say manner of turning, and shall we say in a motion of natural disposition. We can only understand the portion of our road that is visible to our eyes, as this stinking hot hillside is visible to me, and beyond that we cannot know. But we do know that each of our paths is different and pertains to the individual’s own inner nature and the forms of his understanding. There are different roads to paradise, which are in accord with our natural dispositions, once we have understood the nature of the path itself. The path is not a road that must be found, it is in us already, our path is ourselves. According to the most holy master Sadha, the path is nothing other than the soul herself. Jiva, the soul herself, she is the path, not the road you tread, that is only a piece of dirt. Your soul, my small Canadian friend, she is the path you are seeking, she is spread out for you as a bridge, she follows the little streams and endless mountains of your own desires, your soul extends over the surface of hell, and continues her way winding and caressing the earth, all the way up to paradise. The nature of your soul herself determines the route you will take on your journey back to heaven. Look at the path of your life, look with a true and dispassionate eye at the path of your life, and you will see she follows your own design and construction, she will take you over the surface of your own hell, where the world is on fire and the mountains are charred with ash, and she will bring you to a place like this.

— A rock?

— A place like this, where you can stand *pada popa gamana*, you can stand like a tree and become slender.

I’d sort of understand what he was saying, but I’d also have the feeling he was making fun of me.

— You have never lost the path. You have never lost her, because she is you. This is my message, wee Canadian person. You mistake your way through the world for a thing in the world. If you don’t understand that, then I really can’t help you.

I’d write down: Path is me? / Gendered female?

— Thank you, sorry to interrupt you. Please go on with what you were doing.

— I am dying.

— Yes, sorry, I didn’t mean it that way.

I’d back away, bowing. I wouldn’t be entirely sure if the master had been making fun of me, but he probably had. I’d turn and creep away down the hill. A banana’d hit me in the small of my back, but when I’d turn around they’d all be still as stones.

I could, of course, try asking real people, other than Catherine. I could ask Rosie, she’d at least listen. Fina wouldn’t answer. She was glad she’d gotten away.2

I could ask Tee, but he’d laugh in that unpleasant way that means, Okay, I’ll play along, but only for another couple of minutes, because I have to get back on the road of my own life, which today just happens to be a drive along the coast highway in California, in a modified stealth black Lamborghini Veneno, with the road closed fifteen miles just for me, all of it livestreamed, with thousands of people watching in awe and envy.

— Oh, I’d say, that’s great, and where does your road lead?

— Well, he’d say, I doubled up my calendars, I arranged it so the drive ends right at the conference center in Monterey, where the shareholders are waiting at this very moment, watching me onscreen in 3D thanks to my drone net. We’re really on our way.

— Where are you going?

— The sky’s the limit.

— You’re going to heaven?

— Sorry, he’d say, I have to go. Want to ramp up to 160 mph for the big entrance.

How does distance first appear between people? Is it a hesitation so rapidly resolved that the other person doesn’t even notice? A momentary sideward glance? An instant of silence in the smooth sounds of conversation?

When two people see the world differently, even for just part of a second, a space opens. Unnoticed, like the tight spaces between the letters of a word, like the white paper between the words in every sentence. The space widens, silently dividing the two people’s thoughts.

Soon the world fills with gaps between what is said and what should be said. Empty space will gather between the two people. They will stand farther apart, they will begin to move apart. From that moment on, paths matter.

At first Adela and I orbited each other, we didn’t need paths. But now Adela has her own path, back to her mother’s house, into her language, into her past.

There are enormous gaps in the world, distances so large they can hardly be measured, too vast to understand. They grow continuously, invisibly, the way astronomers say the universe is expanding. People fall into those tremendous emptinesses. They hold their breaths, they do not know where they are headed. Like little boats on a dark sea.

**<Chapter 9 Viperine, Vahlkampfiids, Vampyrellids>**

When I got in Vipesh was already in the lab, waiting for class. It was good to be back in a room with an actual person in it. Maybe Catherine was right, my long walks didn’t do me a lot of good. Vipesh was wearing pressed gray dress pants, possibly silk, and bright button-down shirt. Today’s was purple, but he also favored disco pink. He looked like he’d shaved five minutes before class. His chin and jaw were pale with talcum, and his black hair was shiny. He saw me looking and grinned.

He knew he’d get an effusive letter of recommendation to go with his Lab Certificate in Water Management. After all, he was always impeccably well prepared for the labs, and ready with an answer even if I hadn’t yet decided, for sure, if I was actually going to ask a question. When it turned out I hadn’t intended to ask a question, he’d politely put his hand down, as if to say, I know you decided not to ask that question because it would have been too difficult for the other interns, and we’re agreed it’s best not to upset them, so I don’t mind losing the chance to give you the perfectly modulated response that your demanding and trenchant but very fair question would have called for, and really, the reason I don’t mind is that we both know you’ll be looking forward to discussing the unasked question, my response, and the ramifications of our mutual unspoken decision not to broach those issues, at length starting right after today’s lab.

Vipesh had asked to do a special presentation after Blake’s, because he’d found out that Blake had overlooked a subject that was likely to be on the Certificate Exam.

The room filled up, and I surveyed my little class: Blake in front, Courtney at the second counter, Rebecca or Maureen at the third counter. They were munching away on donuts Vipesh had negotiated from Rosie. I couldn’t remember if Maureen was the one with short straight black hair who thought she was god’s gift, or if that was Rebecca and Maureen was the one with the long blonde hair who thought the other one was god’s gift.

Viperine slipped in and sat in the back. She waved at me by holding up her palm and delicately flexing the last joints of her fingers. The projector shone a small bright image on the lab’s whiteboard:

— My talk will introduce today’s lab, Blake said, in a strong Korean accent made more difficult by his habit of looking at his hands. We will study Vampyrellids, that is amoebas that suck juices out of plants, and Vahlkampfiids, that is amoebas that suck brains out of people.

Blake was headed toward a commercial-sector job, where he’d make passable middle class wages as a lab technician. Eventually he’d develop chronic back pain or an eye condition from years of peering at pipettes or staring down microscope eyepieces.

— Our first topic is, How do these amoebas get around? And I will explain this about brain eating amoebas.

The first slide was a pen and ink drawing that looked like it had been done by a child.

— Vampyrellids is a kind of amoeba that have very thin pseudopodia. Filose. It means thready.

— Thread-like, Courtney said.

— Filose.

— Not “thready,” thread-like.

— Okay. Some species have up to twenty filose pseudopodia. In the drawing there on the left they are numbered 1 to 12. On the right, the amoeba moves. See the pseudopods branch. These slides are from an essay by Bela Solski, from the journal *Archiv für Protistenkunde*, volume 123, 1980. The essay describes a species of Vahlkampfiid they discovered, called *Naegleria perforans.* That is because it perforates the cells of other creatures with its filose pseudopods.

Muffled sounds of keyboards. The students needed to pass the lab in order to get our Certificate, which would qualify them for jobs in the Water Departments or Conservation Authorities.

— Later we will talk about Vampyrellids. In the comic, Vampirella is an inhabitant of the planet Drakulon. On Drakulon people live on blood. The very rivers flow with blood.

— The rivers are blood, Courtney corrected.

She looked horribly bored, but then again she always looked that way. She seemed to resent everyone. For some dark reason she was resigned to the fact that when she got her Certificate she’d go back to her parents’ house, which was out in the “absolute middle of effing nowhere,” a place called Jelicoe on the Trans-Canada Highway. She also reminded me of my mother: condescending, cranky, and always on game. She even looked a little like my mother in pictures taken before I was born: oily hair, mouth tensed, skin already wrinkled from a combination of smoking, sun, and unhappiness.

— Drakulon orbited a binary star, Blake continued, and one of its suns entered into a red giant phase. The forests they burned and the oceans they steamed.

He was reading from his phone.

— The blood rivers of Drakulon became coagulated. And thus the poor inhabitants of the planet Drakulon could not drink the coagulated blood rivers, and were forced to leave and to voyage and to seek other worlds.

I pointed out to Blake that the comic Vampirella was spelled differently from the amoeba Vampyrella that he was supposed to be talking about.

— Dr. Emmer, I see you are right, he said, struck dumb by this apparent profundity.

Rebecca or Maureen laughed.

— If you search Vampirella, she said, you get this lady.

She turned her laptop around so everyone could see.

— Yes! The lady in tights! Blake cried. Elvira, Mistress of the Dark!

— No, Blake, Courtney corrected him. That is different. Search it.

— I believe, Vipesh said, casting a benign but disapproving look at his fellow students, our subject today is *Vampyrellidae*, spelled with a *y*. Isn’t that correct, Doctor Emmer?

His relentless politeness seemed to act on Courtney like a poison. She shrank down like a frog with indigestion.

I nodded.

— So as I am now saying, in this amoeba, *Naegleria perforans*, there are two forms, planktonic and boat-shaped.

Here the body is plankton, stretching into a boat. You see it grows a point on the right side. That is called a lobopodium. *Podium* is Latin for foot, and *lobo* is Latin for lobe. Lobe foot. The lobopodium sprouts a thick new pseudopod, numbered 13.

— What is a lobe? Maureen or Rebecca asked.

— Lobe is lobe, Blake said.

— Your ear has one, Vipesh offered.

— Not like that, Rebecca or Maureen said.

— *Lobo* is not Latin, Courtney noted, looking at her phone. It’s Greek. *Pod* is Greek for foot, not Latin for foot.

— Pod bump?

— Lobe foot, Vipesh said.

— There is also axopodium, it means mucus foot. Also this is a protopodium, or protopod, meaning prototype foot.

Courtney realized her contribution had been trivial, and that seemed to put her in an even worse mood. She stared daggers at the whiteboard. What in life would make her happy? She was both sharp and frail. If she married a slightly dim farmer or an average dull businessman it’d be a mess. She’d be quicker with everything, she’d correct her husband even when she didn’t have to, and then she’d be annoyed at herself for correcting him, and that would make her even more annoyed. Like a snake biting itself over and over, hurting itself each time.

— Mucus foot! Blake repeated.

— I wonder, Vipesh said, may it be possible to say that the amoeboid is, in this case, moving to the upper right?

Blake stared at the screen.

— I say this because the filose lobopodium labeled number 13 is sprouting more pseudopods than the filose lobopodium labeled number 14. I believe that indicates what Solski calls exploratory behavior.

Vipesh smiled his tense victorious smile, partly to his classmates, in order to advertise that he had found and read an essay that hadn’t been assigned, but mainly to me, to signal that his remark was intended to help move the lab along, that it was a courtesy to me, just as any colleague would help any other, or as two professionals, who had known one another for years, might work seamlessly together, one taking up the suggestions of the other, alternating their contributions as if they could read one another’s thoughts, completing one another’s sentences, working in a perfect state of harmony, mutual respect, and understanding.

Courtney’s mouth was hanging open, as if she was verging on catatonia. I expected a string of drool.

— Vipesh you are right, Blake said. Most of the legs continue to retract as the amoeba moves and turns into its boat-shape. When the pseudopods pull in, they make bumps. That is called candling. It is like the little blobs of wax on the side of a candle.

He walked up to the screen.

— In Drawing E, you see the amoeba now has three tails, they are numbered 14, 15, and 16. Before it was one lobopodium and now it is three pseudopods. Now see the top. There are the candles, numbers 3, 4, 5.

— Candled pseudopods, Vipesh said. Also numbers 7, 8, and 9.

— Okay. Now on the right is the last drawing. This is what Vampyrellid amoeba looks like when it is stretched out on the bottom. It looks very tired.

— This, Vipesh interjected, is the boat shape. Note two sets of filose pseudopods, front and back. The complete transformation into the sessile boat shape!

Silence.

Courtney was staring into space as if she had cataracts. Or maybe she had died and was turning into a zombie.

Vipesh smiled at me again, but this time I scowled in return, because he was signaling that even if he, Vipesh, didn’t have any real feeling for anything I taught, he certainly knew what was required to become a truly excellent teacher, which was friendly dissimulation and enhanced enthusiasm, and he knew I knew that about him, and that I valued his decision to take me as a model even if he did not share my enthusiasms, and he knew I was grateful to him for being understanding, sensitive, forgiving, and well-meaning, and also deeply collegial, supportive, nourishing, even loving in the professional, non-intimate sense of that word.

In back, Viperine had a slinky expression. She seemed to be feeding off the silence.

— Before we go on to Vahlkampfiids, I said, Vipesh has has asked to do a short presentation on something else about the Vampyrellids.

Blake sat down, and Vipesh attached the projector cable to his computer.

— First, Vipesh said, I would like to express my heartfeeling thanks to our Professor, Professor Samuel Emmer, who is a very generous teacher and instructor, and is very great to guide his students through the “mazes” and “warrens” of water purification, and especially the “webs” and “networks” of the *Vampyrellidae*. What I am destined to present here is not in any way a correction to the wonderful, inspiring and beautiful talk we have just heard from my new friend Blake. It is only a small contribution to the “mesh” of ideas in the “labyrinth” of biology that we are so privileged to explore here in Doctor Samuel Emmer’s class, which—

— Please, Vipesh, Courtney said. Just go ahead.

— Thank you Courtney. So when the branches of the pseudopods grow long enough, they sometimes touch each other, and when they do, they stick to each other. They are not like branches of a tree. Tree branches can grow next to each other like brother and sister, and sometimes they touch each other by mistake, but like brother and sister they do not stick to each other. Vampyrellid pseudopods are more like spider webs. When branches cross, they stick together. They form a “skein” or “mesh” or “network.” When parts of something stick to each other, it’s called anastomosing.

— What happens when brothers stick to sisters? Blake asked.

— Let us not investigate that. However Vampyrellid pseudopods are more like spider webs, they can stick to themselves.

— What if it happened to people? Blake asked. Like your fingers would stick to your leg.

— Undoubtedly it would be gross. Yet consider how common it is in nature. Streams also do this. When one stream streams close to another stream, and they meet, that is called an “anastomosis of streams.” Also it happens in different animals and plants. Mushroom gills, the part underneath the cap, they are “anastomosing.” The veins in leaves merge when they touch. Arteries in our bodies sometimes meet, and this is also known as “arterial anastomosis.” Veins also, they create a “venous anastomosis.” Abnormal ones are called fistulas. Some people have abnormal arteries that are merged with veins, so fresh blood pours right into the venous system. That is a fistula, and it is not a good thing. In the brain fistulas sometimes rupture, and then blood leaks out. That is called a “subarachnoid hemorrhage.”

— Subarachnoid, Blake said. Cool.

— Not really. The subarachnoid is a place at the bottom of the brain where blood can pool.

— Subarachnoid. Lower than a spider.

— Lower than the arachnoid membrane, Courtney said. Below the membrane.

— Excellent work Courtney! And now I will show a “skein” of “anastomosing pseudopods.” Behold.

— The main cell body is offcreen to the right of this view. Notice how the branches are all stuck to each other. These very thin, straight pseudopods are not called pseudopods usually. They are called filopodia, that means thread feet. And please note the little balls of candling all over the place. The filopodia are always streaming out of the organism, that is from the right, and being pulled back in. If you watch in a video, you will see that in one or two seconds these will shift. Does anyone see in this picture a shape like a little head?

The students squinted. Vipesh shook his head, as if to indicate that no one would be able to find the little head without help.

— In the middle. A small oval head, with two tiny round eyes.

— Yes! Blake screamed.

— Tiny, Rebecca or Maureen said.

— See a line going down below it, to the left?

— Yes!

— Watch this next image and you will see that particular filopodium dissolves.

He showed a second image, almost a copy of the first one.

— These kinds of filopodia that stick to each other like a spider web, they are called granuloreticulose, it means granular and net-shaped.

— What is granular, please? Blake asked.

— They have little bumps all over.

— Candling, Courtney said.

— Lobes, Maureen or Rebecca added.

— Not lobes, candling.

— Granules.

— What is a granule, please?

— A little bulb or dot, I said. Like grit.

— This is all yuk, Rebecca or Maureen said.

— This photo is twenty seconds later. Now you can see even more changes.

— I see nothing, Maureen or Rebecca said. Just yuk.

— Below that little head with the two eyes, in its neck, there is a black blob, some candling.

— Or eew, Rebecca or Maureen said.

— Right where his little heart should be, Blake said.

— Right, eew.

— Eew York City.

— Spew Yuk City.

— Ha ha, that’s good.

Vipesh zoomed the projector in.

— The little man is dead, Blake said.

— Like a tiny skull? Vipesh asked.

— Old corpse. Dried out.

— Sometimes it is useful sometimes to imagine things, but we may also learn from this. You can see to the left of the black lump in the neck, there is no longer candling. In its place are dark droplets. And farther left there a T-shaped thing, like a tree growing up on the filose pseudopod.

— Dead tree. Like a cross.

— These outgrowths of the amoeba are reabsorbed, like the head will be. Soon the tree will be gone, and the black candling.

A voice from the back.

—Excuse me?

— Death landscape of Drakulon. The forests burned and death hung high in the sky.

— Excuse me?

Viperine stood up. Her right palm was raised, and she was flexing her fingers as if her hand was inching up a windowpane. Each time she flexed the hand went a little higher.

— Mr. Vipesh is correct, she said in a tiny voice. If you don’t mind.

I gestured for her to come up front. The other students watched as she walked, in mincing steps, up to the screen. The class was very still. It reminded me of the way cats will make way for an opossum: they keep quiet and watch until the opossum has gone wherever it’s going. That is because cats realize that opossums are more dangerous than they are.

— I cannot say for certain in this particular case, Viperine said, tracing the trunk of the tree up and down with her finger. But I can say there is literature on the autonomy of filose pseudopods. Some become centers that produce new pseudopods. They have their own life, they have budded from their parent cell but have not yet detached. The danger for these unborn or partly born offspring—she traced the little head and the black clot, around and around—is that the mother cell might perceive them as prey, and suck the protoplasm out of them before they have fully budded.

— The vampire strikes back! Blake said.

— Would you like to introduce yourself?

— I am Viperine Pistouriec. I hope to join the Water Department as an intern.

— I knew it, Maureen and Rebecca said.

— Are you a boy? Blake asked.

— I don’t think so, Viperine said.

— Are you a they? Blake asked.

— You may refer to me in any way you please.

— And so, Vipesh said, Vampyrella vampirizes its own offspring.

— It just doesn’t seem natural, does it? Viperine asked in her Marilyn voice, looking at me soulfully.

— But what is natural? I asked, as sarcastically as I could.

It made me a little queasy, the look Viperine gave me, as if we had just done something obscene in front of the class. She turned and walked back to her seat.

I suggested we go on to the second half of the lab. Courtney brought her laptop to the front of the class.

— Thank you, she said, looking at her notes. My talk is on Vahlkampfiia, the kind of amoeba we saw in Blake’s slides.

— Vahlkampfiia has two “i”s. It includes the brain-eating species *Naegleria fowleri* that killed that boy last year. As we now know, they can mold themselves into two forms: round, and boat-shaped. They are round in floating water. That is the planktonic form. They can also sink down and become boat-shaped. That is substrate form. If you swim in water that has *fowleri* in it, or if you rinse your nose in a neti pot using water that has *fowleri*, it will stick to the mucous membranes inside your nose. It will stream upward until it finds the olfactory nerve, that’s the main nose nerve that brings information about smell into the brain. Inside your nose, at the very top inside, there is a small skull bone, the sphenoid, it is part of your skull, and on the sphenoid there is a tiny perforated plate called the cribriform plate, cribriform means sieve-shaped. That is how the nose nerve goes into the brain. It is very tightly sealed, so your brain is protected, except from this one amoeba. It follows the nerve into the cribriform plate, through a hole in the arachnoid membrane, remember subarachnoid, and into the brain. It is encephalophagus, it feeds on brain tissue. Once it is inside it ingests neurons and blood cells and causes subarachnoid hemorrhage, hemorrhagic necrosis, and meningoencephalitis. Almost all patients die.

— That kid had seizures.

— Right, Blake, he became nonresponsive and died in a day and a half. So the question is, how does this one species of amoeba, of all protozoa, attach to the nerve and make it through the cribriform plate? Well, Vahlkampfiids can produce an enzyme called elastase, which dissolves connective tissue proteins like the ones in nerve sheaths. Fowleri also practices trogocytosis, that means it strips surface chemicals from nerve cells and pastes them on itself. That way it is in disguise, so it is not attacked when it goes through the cribriform plate and into the brain. Once it is there, fowleri transforms itself into a branched shape, and the branches look a lot like nerves. So again it is not attacked by the body’s defenses. It multiplies inside the brain. It forms its own neural network, sticking to neurons, branching, dividing, spreading, reproducing, keeping itself covered in strips taken from real brain cells, looking just like normal brain cells, until finally it attacks. At that point there is no hope for the brain, it is entangled with sticky strands of fowleri. People’s entire frontal lobes become a mash of blood and necrosis.

Blake shook his head in admiration.

— Here are some diagrams of the forms of fowleri in the brain. The forms look similar to what we saw in Vampyrella: a fat body, with filose pseudopods and candling. Then a couple of hours after infection the Vahlkampfiids stretch out. They branch like nerve fibers. In five or six hours the individual cells have become amazingly complex. Thousands are interwoven with real nerve cells. *Naegleria* cells attach to hundreds of thousands of synapses, exactly as they were natural brain cells. They lie right next to the nerve cells.

— Oh my god that is so cool.

— Blake, a boy died. Six to twelve hours after infection, all of a sudden all the Naegleria cells lose their trogocytotic disguises. The antibodies in the brain recognize them, but it is too late. The Vahlkampfiids are everywhere. They lie right alongside the neurons in the brain. They lyse the neurons in the frontal cortex, and the infected person has terrible headaches, dizziness, and sometimes seizures. In an hour or two the front part of the brain is reduced to plasma, blood, and cell fragments. Better not grin, Blake, that boy died.

— May I?

It was Viperine.

— There is more.

She walked halfway to the front and stood next to Maureen or Rebecca.

— According to Vernon and Francine Marciano-Cabral, who wrote the most detailed study of this phenomenon, the *fowleri* cells actually communicate with the neurons while they are still in disguise. *Fowleri* cells have functioning neural synapses, and as the infection spreads they are integrated into the frontal cortex. They are in effect a functioning brain within the brain. Before the *fowleri* cells reveal themselves and kill everything around them, they are intimate with the centers of the brain near the cribriform plate. Those are regions of the brain that control concentration, personality, elaborated thought, self-awareness, and language. So for several hours, some of the victim’s thoughts go into the amoebas, and it is possible that the victim perceives the amoeba’s signals as thinking. It is possible the victims’ seizures are the result of suddenly realizing that they are thinking amoeba thoughts.

— That is ridiculous, I said.

— On what basis, she said, barely whispering, would you ridicule a theory that is supported by electrochemical evidence?

— Signals may be exchanged. Consciousness is something else.

— That is your opinion, she whispered, and tilted her head sideways at me.

Maureen or Rebecca craned her neck and looked Viperine up and down from close range, as if she was a strange animal in a zoo.

— Oh, this is super! Blake said. Boy Goes Swimming and Becomes Amoeba! Hears Amoeba Voice!

— May I please conclude my presentation now?

Viperine went back to her seat.

— Goes Mad! Voice of Amoeba Made Me Do It! Boy Yells As He Throws Himself into Chipper.

— Please shut up Blake. I will continue now. Some Vampyrellids and Vahlkampfiids entrap the things they eat and pull them in to their cell bodies in order to digest them. But not all Vampyrellids and Vahlkampfiids do this. Many can dissolve and digest their food while it is still in their arms. They are in effect nothing but webs, they have no proper bodies. There are many amoebas that do not have proper bodies. *Leptophrys* is another Vampyrellid. I think it is a nightmare creature, as if a spider web was alive. Or *Arachnula impatiens*, another one, the Impatient Spider Amoeba, a spider that has dozens of sticky legs. *Arboramoeba*, the Tree Amoeba, Blake, you might want to look that up too. *Reticulomyxa*, the Net Nozzle Amoeba, is just a mass of strands, no center, no body at all. As if a crowd of people all spat on the floor. These things are real monsters, Blake, not like in Hollywood. The world is full of them. We are full of them. That is the end of my presentation.

I switched off the projector. Vipesh jumped up and turned on the banks of fluorescent lights. The students shifted and blinked.

— Courtney, you are so cool after all.

— Thank you Blake, you are not cool at all.

The students gathered their things, and soon the lab was empty.

In the remaining water samples there were more headless dogs, deformed dancers, and bouquets of penises, all living, shifting, turning, and falling, forming momentary constellations in the water, without even knowing what was happening or where they were.

I logged the results for Agathe. Mosy of the samples were nearly anaerobic. Dissolved oxygen was less than point eight, indicating that the city should definitely not give the power plant a tax break. I sent the report to Agathe.

Rosie opened the lab door.

— Still want to go? she asked, and my mind cleared instantly.3

We walked together down the steel mesh steps, and out we went into the deep blue evening. The air had that unpleasant cold that announces the end of autumn. She pulled up her hood.

— I’ll leave the car here, she said. I have to come back to pick up the report anyway.

— My report?

— Government requirements. All departments have new paperwork.

— We all have our spreadsheets now, I said.

We walked up Waterworks Place and turned on Lorck, this time away from the Great Concavity.

She told me she’d lived in Sweden for three years starting when she was seven. Then her father, who distributed equipment for the Canadian Army, had moved them to Abu Dhabi. I was happy to listen, it was all so human and sensible.

— When I was thirteen, she said, my father went off with another woman, and my mother and I came back to Canada. But then she became ill, and a year later she died.

— There’s nothing that really heals that, I said. My mother died almost ten years ago, and I still think of her a lot.

I wondered if Rosie had the same illness as her mother. Anemia, maybe, or an inherited metabolic disorder. Even in the half-dark she was pale, like a lake at twilight reflecting the darkening sky. But people have their own reasons for explaining things, and when she wanted to tell me she would.

The walk to the restaurant was a kind of dream. We spoke easily to one another. I kept reminding myself it was only casual chatting. But I kept interrupting myself, because this was how people speak when they belong together. They talk about anything at all or nothing in particular.

At Mikuya we sat in a tiny blond wood booth, our knees practically touching. We talked about the wonderful effect of hot sake, how you can feel it pouring through your whole body. We complained about the paperwork involved in something as simple as drinking water. She told me about her father’s career as an itinerant equipment distributor for the Canadian Army. She hadn’t seen him since he’d gotten a new girlfriend in Paris. I said I was sorry, but she said it was okay. She told me about her brother’s problems managing his farm in Oustic. How it also involved enormous amounts of paperwork. I described Adela’s brave new life that I couldn’t understand, and how I hoped Fina would settle into college.

At the end of the meal, when we were going our separate ways—she was going to walk back to pick up her car, and I was going to the city center and my highrise—we stood close together as a crowd of students flowed around us.

— You know I’d love to see you again, I said.

And she said,

— Yes, so would I.4

**<Chapter 10 Rosie’s Crystals>**

It was Sunday and the building was empty. I sat at lab’s front counter looking through the work schedule. There were 886 bacteriological samples to be taken before May 1, a set from the landfill, which was probably leaking, and a set from Woolitch Road on account of potential sewer contamination.

I washed my hands and went over to the large microscope in back of the room. The Zeiss universal stage was waiting for me, elaborately packed inside boxes inside boxes. It took most of an hour to unwrap it, dust the parts with compressed air, and reassemble them.

The universal stage had nothing to do with my job. It was an instrument used in geology, a field I know almost nothing about, to identify crystals. I had bought it because it is a world away from protoplasm: it’s all about mathematics, optics, and chemistry. For the next few weeks clean, dry crystals were going to take the place of the dubious water I usually studied. Crystals were going to still the images of microscopic animals that kept pooling in my mind. Minerals would replace streaming protozoa with static geometry, they would dry up my oozing thoughts.

It has been an exhausting winter, finding out what Rosie’s really like. When I first got to know her I had the idea she was like a bunch of forget-me-nots, lovely little blue and pink flowers miraculously growing in the unhealthy wasteland of my life, a godforsaken place where fireballs plummet from purple skies, caustic rivers are clogged with flaming rafts of pitch, where beetling cliffs swarm with gummy monsters and bottomless clefts belch dizzying vapors, where sinister elephantine ruins are carved with incomprehensible glyphs and the lifeless ground is scattered with radioactive shards—except in that one little patch where the pink and blue forget-me-nots rock gently and obliviously in the infernal breeze.

That’s what I thought back in October. Our second date was just before Christmas, at Saigon. When I finished the lab work that day she was there in the parking lot, waiting for me. The weekend before she’d been out at the farm, helping Albert.

— Routine, she said, that’s what I need. The farm is always in crisis, there’s always something.

We walked down Taylor Street against a biting wind. In the collegetown we passed Mikuya. Students were milling, texting, smoking. Wind brought the sound of church bells down Marimba Street. A woman posed by the university’s bronze gryphon. She held her hands around its golden beak, as if she was preventing it from biting.

— There are reasons to be concerned, Rosie said, taking my arm and putting her hand in her coat pocket. Albert had to go to Toronto, because he’s petitioning the Farm Marketing Commission to raise the barley quota. So I had to mind the animals, and of course take care of my aunt and uncle. Ellie is very frail. She said she has stomach problems, but she doesn’t want to tell me about them and she won’t go to a doctor. I think she thinks she is dying.

We turned the corner to Paisley Street, and I heard the church bells again. There is something wonderful about bells in the wintertime. The cold makes them sound brittle, turns bronze bells to brass pots.

— Ellie gets around, more or less. She doesn’t have a care worker. Albert does the shopping and cooking, as well as running the farm. There’s a girl who comes and cleans, and on Sundays Albert takes Ellie and Edward to the church dinner. It’s a lot of work and I’m not used to it. The girl is from up the road. She has Crohn’s disease, and her father needs care, so she just sweeps and takes out the rubbish. I end up doing everything else. There are chickens, four Guernseys to milk, a dog that does nothing but bark, and eight cats.

She squeezed my arm, making the shivery gesture indicating she was cold.

— Uncle Edward is hopeless, too. He used to deliver food for JF Chen. He did that for years and years until he stepped in a hole and twisted his leg. He claims he has twelve thousand dollars in cash, just from tips, buried next to the stone barn. Ellie says it’s true. But Edward has a huge drinking problem. Also, he is eighty years old, and there is no way he has the strength to keep digging up and burying a box of money. Besides, who could earn twelve thousand dollars from tips in rural Ontario? Plus, I’ve never seen him with a shovel. He has a solicitor, he is going to sue the person who has the hole in their yard. So I’m worried about both of them, and Albert too. And Stuart Zachery, that is Albert’s son, he’s eleven. He has a condition. Oh and two of the chickens are sick. So I’m using crystals to align the energy at the farm.

She looked at me to gauge my reaction. Her arm was so light that I could barely sense it under her coat.

— You probably don’t believe in that. I know it’s not science, and anyway it hasn’t worked yet. They need to be placed in different ways. Some of them need to be bigger. I think the whole farm is out of alignment. Chickens try to hide their symptoms and act normal as long as possible, but they’re chickens, they can’t conceal things from people. They are thrown off by bad energy. One sneezes, the other has blue poop. I showed the poop to Albert when he got back, but he’s really distracted. That is routine poutine, he said. I asked him if he has seen the large orange spiders. The farm is full of them, but it didn’t used to be.

I knew I should say something friendly, but it was hard not to hear how my mother would have answered. She’d have tried to sound neutral, when in fact she would’ve already decided that Rosie was a simpleton. She’d offer Rosie a chance to admit she was joking, something like, Aren’t those old superstitions wonderful?

— Go on, I said, hoping she thought I was seriously considering whether bad energy gives chickens diarrhea.

She pulled her hand out of her pocket without unlinking our arms and showed me a ring with a black stone in it.

— Magnetite. I keep this with me all the time. I put a few crystals in the coop, and a couple in the Water Department office too. There is a small magnetite under the coffee maker, because that is a warm place and Agathe stands there. I think Agathe needs inner warmth, sorry, but I do. And I dropped a big one into the copy machine. A first I worried that I broke the copy machine, but it works fine. I’d like to put one into Agathe’s pockets, into her clothing somehow.

That is how Rosie talked back in December. At the time I thought it was possible she was a little nuts, but also sweet to tell me things.

— That’s lovely, I said. Please don’t get caught.

Saigon was in an unlikely place past some empty lots, next to an unpainted cement warehouse. It turned out to be jammed. We walked down a couple of steps to the narrow basement entrance. Four people were waiting there, in the cold. Inside was a tiny foyer with a couple more people. We pushed by them and into a crowd standing in front of a speaker’s podium that served as the restaurant’s reception.

We stood close together. She smelled of bar soap, and along with it there was another note: she was tired, or strained, or maybe I was picking up a lingering pharmaceutical tinge. We were led to the back of the restaurant where there was a little table next to an aquarium. I moved around and sat in the corner. It wasn’t easy to take off my coat in the cramped space, and it stuck for a moment on something under the aquarium, which turned out to be a green and white plastic model of a volcano set in a moat of water. Water bubbled out of a round well on top, trickled down the mountainside and past a little plastic mill wheel, which had been knocked off axis but was still turning. The volcano was decorated with Christmas lights and set in a big dish of water that was illuminated from underneath. A clear plastic sphere the size of a golf ball spun in the caldera. Despite the roar of the restaurant I could hear the burbling of the water and the whir of the motor. Plastic flamingos and storks were glued onto the volcano at slightly wrong angles that made it look as if they were magnetic. A flamingo that had fallen into the moat. I picked it out and laid it on my napkin.

Several bug-eyed fish regarded me from close range.

The waitress brought two glasses and a bottle, which Rosie said was glutinous rice wine. She’d ordered it on the way in, which I thought was very clever of her. Then she ordered for both of us using the Vietnamese names of the dishes, which wasn’t quite as endearing, but surprising and therefore also somewhat promising. She knew the names of the dishes and pronounced them confidently. I asked if she liked Vietnamese cuisine, and she said, Not as much as Joe, and I said, Who is he, and she said, My boyfriend. And that was pretty much the end of my silly fantasies, except for a little leakage of hope that dripped out when she smiled at me, or, a few minutes later, when she asked me how long I’d lived by myself. But those trickles of fantasy dried out like the little plastic bird on the napkin. I reminded myself that it wasn’t entirely unexpected that she had a life of her own.

When the dishes arrived she served us and poured me a second glass of rice wine, because apparently I’d drunk my first glass.

— Ellie had a friend who lived in one of the residence suites, a Vietnamese woman. She was married to an NCM, a Warrant Officer, but he died. Her name was Lynne, except one time I found out it was spelled L-i-n-h, it means “gentle spirit.” She cooked us dinners at her long-term suite, but that place was depressing. Then the cooking developed into a part-time job. She cooked for us when we had guests. I used to watch, and later I helped her. She was great, she was totally centered. I went with her to Toronto, and she showed me how to shop in Vietnamese grocery stores.

Rosie’s smile was slightly pained or uncertain. The pained part was probably because she knew that smiling showed how thin her face was. At the same time she didn’t want to think about it, so that was the tentative part. Her hair, too, was in between healthy and less so. It wasn’t dyed blonde, but it didn’t quite look natural. It was young-looking, but mixed with illness; thin, possibly thinning.

When the food arrived she had another glass of rice wine. She beamed and threw her arms around and told me about a trip she and Joe had just made to Sarasota, how the sand in Siesta beach there is so fine-grained it squeaks under your feet, and the water is deep blue like Kool-Aid, and the sky is really deep blue like something, she didn’t know what. She was full of happiness. At the start of the meal I’d been thumbing my imaginary Rolodex of questions: We had a nice dinner in Mikuya, didn’t we? I’d love to see you again, maybe a visit to Toronto? Now the Rolodex was useless, but it didn’t seem to matter. Rosie was having a good time.

I told her a story in return, about a time Adela took me to the Liptov Sea in Slovakia, where there was a church built right on the shore. We went swimming naked under the white church tower. The sea was formed when they dammed a river, and it was said that thirteen villages were submerged beneath us. That wasn’t such a great story, because it was about my wife, and drowned villages, and me being naked. So I told her how I used to swim with my brothers in gorges in Watkins Glen, how slippery the rocks were and how fast the water sluiced down toward the dangerous waterfalls. I remembered that, but then I didn’t have anything to add.

I asked if she would mind if I mentioned something different. I said I didn’t know how to put it, exactly, and of course she seemed very healthy, but was she okay, really?

— Oh, she said. I’m just, I have some issues, that’s all. But I’m much better.

— Lots of people have those issues, I said. And who is Joe?

— You know him, he works in the Physical Plant. Wiry, with a goatee and a smoker’s face.

Then she paused, a long time, and looked at her plate with her mouth pursed. She tapped the plastic bird on its head.

— He’s not really my boyfriend, she said. It’s complicated.

Her blush spread down her neck and into her shirt, across the spicy Vietnamese soup and over to my side of the table. Complicated was wonderful. It meant everything to be complicated, things could be done with complicated. An anorectic farm girl from Oustic with dubious convictions about crystals could become the next person in my rapidly decaying life.

— I don’t always know when he’ll come back to the apartment. He spends a lot of time in Fowler’s, supposedly with his friends. Really, he is what you call a functioning alcoholic. A lot of the time he is woolly. When he’s in the plant he has a drink or two for lunch, and maybe after. When he comes back he can be unpleasant. Not violent. He tries his best. He stayed at his place most of last year, then we moved back together in September. I don’t think it will last.

— Same with Adela, I said. She was with me for years, really with me, and then not really with me. And then really not with me. And so eventually we came apart.

— You sound sad.

— We unattached, you know? My marriage is like a rowboat that isn’t tied to a dock. If there’s an onshore breeze it will stay in place. Otherwise it’ll drift off. That actually happened to me once on the lake where I grew up. Our family had an old rowboat. One morning we went out and the boat was hundreds of feet away, moving off into the lake. We could have gotten it, but it seemed like too far to swim. In the evening we checked on it. It was way out in the lake. The next day it was gone. That’s how it is with Adela.

— Okay, that sounds totally sad.

— I don’t think so. People drift through life, that’s how I think of it. You never know where people go.

— Maybe she’ll drift back.

— I hope not. And Joe, is he drifting?

Her lips tensed up, and then she caught herself.

— He likes his life the way he has it. He has me, and his job, and who knows what else. But also he’s useless when he’s at my place. I need work done. I want to close in the back porch so we can use it in winter, but when I bring it up he says, “Okay, fine.” So I say, “I’ll do it myself, if I have to.” And he says, “You can’t weatherproof a porch, you have no idea how to do it. Do you know about laths?” He grills me. “Do you know about cladding? Have you ever used spray-in insulation?” And all the time he’s sitting on his bum. But he’s sweet, he took me to Florida.

The waiter cleared our table. Rosie ordered Vietnamese coffee. I looked at the menu and ordered Banana Che. I wasn’t hungry, and I didn’t know what Banana Che was, but I needed to keep Rosie at the table.

I asked her if I could meet Joe.

— I guess, she said. But really, I don’t know how long it’ll last this time.

I almost had to hide my face, I was so happy.

— I don’t know why I want to meet him. I’m just interested in everything. I think I care about you.

It was her turn to look away. I thought, if there was justice in the world, everyone in this restaurant would stand up and applaud us.1

Banana Che turned out to be a sweet soup, with bananas on top. We talked about how sweet Asian desserts are, how the little plastic bird looked like it was sleeping on a napkin bed, how the owners could possibly think their volcano fountain was beautiful. She didn’t approve of the plastic ball on top, because it was meant to look like an actual crystal ball.

— Those can be great. That one is useless.

— You have crystal balls? I asked.

— Quartz spheres. Seven. They’re for meditation. But really, we don’t need to talk about that. I know you’re a scientist.

I told her it was fine.

She took a spoonful of my Banana Che, and I took a sip of her Vietnamese coffee, which was even sweeter than the Banana Che.

— My brother thinks my crystals are nuts. Joe too, he says they’re dumb. I tell Albert, “You cope with bad energy by working in the fields, or you work on your numbers.”

— So you see things in them?

I pushed the Banana Che over to her and took her coffee back, hoping she noticed how naturally we were sharing.

— You see yourself in a quartz crystal, the real form of you. Not the one in the mirror. I feel sorry for Albert, last week he was up all night prepping crop budget worksheets. I told him, “That’s not good for you. You never see your own energy, you are surrounded by unsafe energies, numbers and words.” I understand his spreadsheets, and I know they are hurting him.

— I have no idea about bookkeeping.

— I could run the farm myself, you know, I have bookkeeping skills.

— Is that bad energy for you?

— I have these, she said, patting her handbag. I can heal myself, but I’m not so good at helping other people.

— Would you ever go back to the farm? To live there?

— The farm can’t support me. There are no jobs in Outsic.

— Where would you live, if you had the choice?

— I can’t think that far ahead, that’s scary. I just want to help the people I know, make everyone healthy.

— I would go somewhere far away, I said, without knowing why I said it.

As we left the restaurant, I walked in front down the narrow aisle between tables. In the crowded foyer I turned and took her hand, and we walked out together. We walked along, talking about the college students.

— Why do they all wear black North Face coats? I asked.

— And high boots.

— Even when there’s no snow.

— Well, she said, they’re students.

Then we talked about Catherine’s sourness, which Rosie said she could cure if she could get into Catherine’s office to place some crystals there, and how we both felt we worked for Agathe even though only Rosie actually did work for Agathe, all the time not acknowledging that we were holding hands, and when we got back to the parking lot at the Department, our hands fell naturally apart.

— You know I’ll be in Oustic at the end of January, she said. Maybe you could come visit.

I’m sure we both thought about kissing, but the moment passed, and it was just as well. We got in our cars, and I followed her out to Lorck. She turned left, toward her apartment. I went right, in the direction of Cather street and home.

The Zeiss UD 124 universal rotary petrographic stage is an unusual sight. Silver parts shine and feel cold and wet. Black enameled parts gleam and are warm and almost soft. Gray painted parts have a diffuse gloss and an uneven surface, like fingerprints cast in metal.

When I turn the large silvered wheel it gently resists, like Adela. It is designed that way, so it pushes back just enough. The black base rotates smoothly, skating on a thin film of grease, like Fina.

The silver universal stage rises up on the rings of its black platform like a model futuristic city. At its center is a glass sphere, like a diminutive crystal ball. The sphere has been divided into two polished hemispheres, and between them I put a thin sliver of the rock I want to study, sliced zero point three millimeters thick. The crystals inside the thin section glitter as I slowly rotate the stage.

Everything on the universal stage moves. I can turn the sphere around, tilt it up and down or side to side. The rings and plates pivot and rotate in all directions. Pitch, yaw, roll. The glass ball rides in its nested disks, staying always in the same place while the stage veers and dips around it. The whole thing reminds me of a model of an atom with the ele­ctr­ons or­bit­ing like sat­elli­tes, or like the earth in those me­die­val pic­tur­es, the little people safe under con­cen­tric whee­ling heav­ens.

Small steel arches called Wright arcs, marked in degrees, are suspended over the sphere so its movements can be measured. Latitude, longitude, altitude. Declination, azimuth, right ascension. The sphere is always in place in its universe. The universal stage isn’t like our world. Our sky is shapeless, our weather is unreliable. Clouds are unreadable, they’re nothing but splotches and smears. If people lived in that little world, their skies would be solid glass, perfectly clear, and beyond the glass sky there would hang beautiful metal arcs. People could look up and read their place in the cosmos off the curving scales. It would be like living inside one of those expensive watches with all the extra dials. Their sky would be inscribed with numbers, not blank and scoured, or cluttered and senseless, like ours. There would be no meaningless streaks and stains in the heavens, no random scattering of stars. People who lived in that world wouldn’t feel like wandering off somewhere, because they’d be at the center of a well-measured universe.

I turned on the microscope’s xenon lamp. A pale bright light shone steadily and clearly into the center of the little glass ball. Again entirely unlike our world, which is lit in the most garish way imaginable by a sun that’s too bright to look at and a moon too pale to be of any use. The sun is a terrible lamp. It glares on some things that don’t need to be seen and leaves others in the dark. We’re forever squinting or peering just to see what’s in front of us. Anything the sun illuminates casts an awkward deformed shadow. Ugly, if you think about it. Your shadow stretches you out and drags you across the landscape.

Our sun is forever moving around. It’s usually somewhere you don’t want it to be. It’s in your eyes, or behind that building, or it’s completely under the horizon. On a cloudless day some trees and fields are bleached and roasted and others shiver in shadows. In the winter the sun is all glare and no heat. Every once in while the sun shines correctly.

Our stars are a mess, too, they’re scattered all over the heavens. We agree to call that beautiful. They gather into clots of galaxies or condense into baggy nebulas. They spin into spirals, they burn, collide, implode, explode: they are endlessly pointlessly random and violent. They’re like people that way. People are forever flying around, massing together, spinning off. They go hurtling away to places like the Arctic. They stick together in clumps, like Adela and her family in Bratislava. Maybe that’s the fault of the universe’s general chaos: we see the wreckage around us and we’re prompted to scatter.

Crystallography is an exact science, rigidly bracketed by the unmovable laws of mathematics. Crystals themselves exist in only six different geometries: isometric, hexagonal, tetragonal, orthorhombic, monoclinic, triclinic. Physics determines the orientations of the facets. Nothing is inexplicable. Everything has a number or a formula. A crystal doesn’t grow into a cat or sprout a face. Once it’s made, it’s made forever. It can be measured completely. Each dimension, axis, and angle, every facet, every chemical that’s in it, every atom. Nothing shifts when you’re not looking at it, nothing is sticky, nothing rots or dissolves.

The universal stage uses polarized light to reveal colors. The thin crystal section looks silvery to my eye, but in the microscope it will gleam and glow with outlandish colors. Strange lavenders that are almost green, pale oranges shot with pink, deep lush reds tarnished with brown.

The colors are the diagnostic, they help identify the crystals. Birefringence colors aren’t the colors of the organic life, the pallid yellow of an amoeba, the acid brown of pond scum, the green-gray of dying algae. They aren’t made by organic chemicals at all. They have nothing to do with the gleaming green of a cat’s eyes or the shimmer of a moth’s wing. The best colors are dead. They are from a distant period before organic life with all its smells and shrieks. Before fat, bone, and saliva. Mineral colors, signals from another world.

Rosie didn’t know about these colors, and she didn’t believe in chemistry or science. Her crystals were full of good energy. She told me crystals exhaust themselves trying to help people. She didn’t know there are often poisons in crystals, like mercury, antimony, asbestos, and uranium. I’d be looking at poison crystals in the little glass sphere. They would be my tonic. Poison crystals might even sterilize the fungal growth of my unsettled thoughts about Viperine.

The first time we drove out to Oustic, at the end of January, Rosie went on about crystals the whole way. She said each one makes ripples of energy, like when a pebble is thrown into a pond.

— Picture it, she said, you’re standing by a pool. It is very still, there is no wind, no ripples. You throw in a pebble. It makes circular waves. Then you throw in another. The two sets of waves make a beautiful pattern. All those intersecting waves, really complex, really beautiful. That is how etheric energy works: one pebble is you, and the other is a crystal.

— I know what you mean, I said, even though I didn’t.

— Wait, she said, you don’t understand yet. With crystals no one throws anything. There are ripples in the still water. No pebble has been tossed, and there is no wind, just ripples, like in the song. When you are together with your crystal, you’re in perfect harmony, you’re both healthy.

— You and the crystal.

— So each of us has three auras. Most important is the etheric body. It is like a plastic casing about four inches thick. If it has any tears or holes in it, diseases and pain can get in. Your etheric body is damaged, Samuel. Its webbing is torn, that is why you have so many problems.

— Can you repair it?

— I hope so. Anyway outside the etheric body is the emotional aura. Some people call it the spiritual body, I call it the astral body. It stores feelings, in your case lots of sorrow, fear, and love.

— Fear of what?

— I don’t know, but I can feel these sorrowful feelings. I can even see them. They are green. They are caught in your astral body. Your astral body is tying to protect you from emotions, because your etheric body is damaged. But your emotions need to be brought back inside you. It is very bad to keep love outside yourself. It is dangerous when you don’t know what you fear. We can work on that. It won’t be easy, it won’t be fun. You may cry. You have been holding your emotions away from yourself, about two feet away. But they can’t get back in because your etheric body is damaged, and your astral body is trying to protect you. But there is good news too. The third aura is the mental aura. That is your active intelligence, your control and your judgment. That part is healthy. It’s the part I find attractive. I can sense your mental aura from almost ten feet away, which is really good. It’s your astral body that is struggling.

— And my etheric body is torn.

— Its webbing, she said. It is collapsing.

I mainly listened, expecting her to finish, but she had lots to say. At one point I interrupted to ask about her brother’s family.

— You’ll enjoy meeting Albert’s son Stuart Zachery, he is seriously great and really cute too. He’s eleven. But also he has issues, like when he was younger he had a serious kind of epilepsy, and it didn’t help that his aura was resonating with his father’s bad energies. So far he’s okay, he hasn’t had a major seizure since he was nine, but he gets little seizures. Once or twice a day he kind of goes blank for a minute or two. The doctor says he’s grown out of the big seizures, but you never know. He is fragile. He needs strong auratic crystals like quartz and sphene. The whole farm is sick. I saw big orange spiders in the garage, and little yellowy ones in the basement and the attic. Stuart Zachery writes creepy poems, like this:

The throne of bone

Stands alone

In the field

It has not been healed

It moans like trombones.

Or this:

Tiger tiger burning bright

Pour gasoline on it set it alight

It howls and runs

Its grin is tight

There is no way to set it right

It burns, it burns so bright

In the forests of the night.

Also he makes spike sculptures out of the foam in his coffee.

— You said he’s eleven?

— They all drink coffee. He makes little spikes, like the ones that grow on diseased auras. He is making sculptures of his aura. Subconsciously he is trying to tell us he is not well.

— Maybe he shouldn’t drink coffee.

— He is speaking to me using coffee.

We turned left onto Eramosa-Erin Townline Road. The farms there are spaced far apart. The last stretch to Albert’s farm was especially windswept, with snow in shallow dunes across parts of the road. Rosie pointed to a group of farm buildings and an old house in the middle of an empty field.

— That’s it, she said.

I’d been vaguely expecting her brother’s farm to be picturesque, with a picket fence and driveway lights. It looked desperate. Out in front, between a rusted tractor carcass and a shabby porch, there was a pile of tires, a large heap of planks bristling with nails, and a raised area of mulch decorated with PVC buckets. The main building was stained and the windows hazed with dirt.

She pulled to the side of the road and handed me a bracelet made of red stones and a ring with a single dark stone held with silver wire.

— Wear these all the time, she said. Garnet and magnetite. Don’t take them off until we leave.

Albert turned out to be as tall and thin as his sister. His hair was cut down to stubble. He kept running his hands over his face as if he was in despair, and then up over his head as if he was shampooing. He fretted and sighed about the farm’s thin margins, the thin weatherproofing, his thinning hair. I could almost see him through Rosie’s eyes, except I couldn’t see the broken aura or the defective astral body. Stuart Zachery took me aside and said that he was having trouble asking out a girl he liked, because she was fourteen, and she wouldn’t talk to him anyway because he was, Let’s face it, as he said, overweight. He demonstrated by lifting his tracksuit and pinching his belly. Then he asked if I would like to hear his new poem, and before I could answer, he recited it:

­— “Down to the Nothing Sea,” by Stuart Zachery Hirondel.

Down to the Nothing Sea,

The nothing there to see

No sand or shells

No boats no bullies

It’s cold and dull and it

Gives me willies

But Albert says Now so

Off we go

Down to the Nothing Sea,

The nothing there to see.

— Excellent, I said.

Ellie, Rosie’s aunt, was hard of hearing. She smiled as if she’d sized me up and decided she didn’t need to know what I was saying. Albert asked her to please, please take her meds. She gave him an especially broad smile.

And just as Rosie had said, her uncle kept dropping hints about the fortune in tips that he’d buried near an oak tree.

— Actually, he said, it’s right there.

He pointed through the unwashed kitchen windows at a tree on the other side of the yard, with a shovel leaning against it.

— There’s a fortune there, he said, in a metal box, buried not more than four feet from that shovel, not a dime less then $45,900, all from delivering Chinese food. My kitty, my insurance, my underground vault. My future, all of ours’s futures, thank god no one knows where it is.

I decided I liked them all. I even enjoyed watching the chickens, or rather, I liked watching the pecking order, because one that Stuart Zachery had named Destructor made it her business to make sure the other hens, especially one named Doris, had fewer feathers than she did.

Rosie and I worked hard that first weekend. While I was given a tour of the farm, she removed two crystal clusters she’d put in Albert’s room. Later, on the pretext of wanting to go for a walk by myself, I buried them in the woods, or at least I scraped up some frozen ground and piled snow on top of them.

The next day Rosie hid new crystals that were programmed with colors and feelings. She put four sphene crystals in Albert’s room, two in Stuart Zachery’s room, two in her aunt and uncle’s room, and one behind the chicken coop. Together we placed a large garnet inside the water heater.

— Success, Rosie said on the drive back. We will fix them in no time.

Once I take all the measurements and identify the colors, in theory I can identify any crystal. I had bought a box of unlabeled mineral samples from Ward’s Science Supply, using the Department’s budget line. I intended to practice by identifying them. When I finished I’d know everything that could be known about each one. Crystals obey an exquisite geometry of angles, planes, and scales. They are beautiful, I thought, like a surgeon’s blade that moves through flesh with no resistance.

My ideas had become monstrous and entangled. I needed to compress my thinking, squeeze out the leaky emotions, stamp them into mineral and metal. I wanted to burnish the soft mousey color of amoebas into the steel gray of second-order birefringent mineral light. Adjust the ambiguous bluish-browns and brownish-blues of Viperine’s irises into pure monochromatic wavelengths. Squeeze the protoplasm of feelings out of my brain and replace it with clean mineral thoughts.

Of course the whole idea of the universal stage was unhealthy. Once again I was hiding, pretending I could make sense of what was happening by coming in to the lab when no one was around and toying with an unnecessary piece of machinery. I knew that, but I also felt an urgent desire for things not to move, to stay where I could see them, and another desire, probably substantially crazier, for people to become numbers so I could classify them. I wanted to put each person in their proper place so I could say, Vipesh, so sorry, it turns out you’re sphene, CaTiSiO5. Country: Thailand, Type: Sycophant, Species: Hopeless. No, you can’t appeal. No, I won’t talk to you more about it after the lab. No, you can’t write me an essay about it. All classifications final.

Adela, good news, you’re a comet. Your interference figure shows dark isogyres. At first it’s a black cross but when I rotate the stage very gently I see a flash figure: the cross breaks up into hyperbolas that rapidly leave the field of view. From the hyperbolas I can calculate you are actually the hyperbolic comet Schwassmann-Wachmann, 2001. Country: Slovakia. Comet designation C/2001A. Perihelion 1.733065 AU, eccentricity → 1.000237, inclination → 41.3903 degrees. So off you go, across the universe.

I was clear-headed enough to know I was in a desperate frame of mind, the kind an addict must experience—a drug addict, a sex addict, or a gambling addict, the kind who says, I know I shouldn’t drink, or sleep with that person, or risk my paycheck, but actually I’m okay because I know I shouldn’t do it, it’s bad for me, I can see that, and the fact that I see it is a sign I’m in control, I have some perspective on myself, and that’s got to be good, it shows stability, shows I can control my life, now where’s that needle, or what’s your name, or here’s my money. I knew enough to know knowing these things didn’t help, but not enough to see how to stop just knowing and just stop. I could be forgiven for wanting a break from the effluvia of my profession, the viscid dribbles and gross evacuations of fluid, all that diarrhea. People are forever leaking: we squirt out liquids, we pour words, we splatter our feelings everywhere. I could be forgiven for spending a few weeks drying out.

On the second visit to Oustic in February, Rosie was haunted. She told me that when we arrived I had to get everyone out of the house for two or three hours. I should say I wanted to go for a drive down Side Road 30, there was a Loblaw there, or up 7 Line Road to Harmony Meadows Alpaca Farm. Could I repeat that, please? Just to be sure I remembered. I had to persuade everyone, take everyone.

When we were out of the house, she’d go into Albert’s bedroom and put a big crystal called a generator in the box springs. She had brought a straight razor to cut the box springs open, and duct tape. His bed was going to get a beautiful generator arrowhead of sphene, so it would be right under his root chakra when he slept. Then she’d put smaller crystals all around in a halo, what they called a chakra healing array. Her brother would be protected by a cocoon, actually an energy shell with its own special harmony. It would be as if he was sleeping in a dream catcher.

Stuart Zachery’s bed was a special problem, because he slept on a foam mattress on the floor on account of his epilepsy. She planned to use the straight razor to cut a slit in the shape of a large circle on the underside of the foam, and push sphene crystals into it. She’d wrap each crystal in copper wire and poke the ends of the wires into the foam so the crystals would stay in place. He was getting a double etheric shell, twenty-four sphene crystals in a halo arrangement.

It was gong to take time, so I needed to keep everyone away for at least three hours, and to be sure to honk when I got back to warn her.

That day I spent four hours looking at alpacas with Rosie’s family. After dinner I sat downstairs reading so she could work on our bed, cutting the fabric from the box springs and wiring a spider’s web of crystals, all pointing to the place where my throat chakra would be. While she did that I looked through her crystal books, one called Healing Crystals: A Through Z and another called Crystal Health, Crystal Healing.They were misguided but warm. The book I’d brought along, Manual of Thin-Section Mineralogy,was soothing but cold. It showed me how I could dessicate my watery thoughts and force them into crystallographic formulas. There was pleasure in reciting the chemical formulas, refractive indices, and crystal habits, as if the *Manual of Thin-Section Mineralogy* was a book of obituaries, with people’s lives pulverized into their essential contributions, their accomplishments weighed out in grams. That’s what it is, I decided: it’s that I want other people’s lives to be burnt into constituent chemicals so they can be analyzed and identified once and for all.

At two-thirty in the morning she finally called me upstairs, but I didn’t sleep well that night, because she kept adjusting my position in the bed so the crystals would point at my throat.

The Sunday morning before we left she was especially frantic. I played cards with Albert’s uncle, and Stuart Zachery and I talked about girls. Meanwhile Rosie worked all over the farm, going back and forth to the car where she’d hidden the crystals. She put crystals in the septic tank, the well, and the attic cistern. She dropped black magnetite powder in the toilet tanks. She tossed fragments of sphene into the chickens’ feed hamper. She called me upstairs and I put an ark crystal in the ceiling light in Stuart Zachery’s room, and then we went downstairs and hid power crystals in the basement, under some especially heavy crates, which I had to move as quietly and quickly as possible. We glued tiny gray-white aragonite crystal clusters that looked liked dust bunnies into the back corners of everyone’s underwear drawers.

After that weekend, I decided that whatever sort of relationship we had was more or less ruined. She loved her family, and she cared for me, but she was lost somewhere in her crystal manuals. Or she was lost differently than I was, with my equally desperate desire to imagine people as inorganic compounds. For her, flesh and blood wasn’t enough, maybe it was too fragile or frightening to think of. People had to have auras, their soft bodies had to be protected. Or, I thought, maybe Rosie is a crystal, and I look at it and see a gleam and glow and imagine I am talking to a person.2

Both those trips to Oustic were chaste, partly because the farmhouse had thin walls, but mainly because Rosie was so preoccupied. We’d had sex eight times. It is callous to count, but who wouldn’t? Or rather, who, at my age, could possibly forget a single moment of those eight decreasingly amazing nights, starting with the incandescent first evening when we’d torn at each other’s clothes in an almost, but thank heavens not actually comical way, and the second night, when we’d stayed up examining each other’s parts, nipples, knees, toes, exploring each other’s bodies, what an awful phrase, but that is what we did because it is what people new to each other do, and the third night, when she’d done all the things I’d dreamed about when I was fourteen, except that I didn’t ask for them and I wasn’t sure she even enjoyed them, and in fact she seemed to do them because she thought it was expected, and the fourth night, when we hadn’t actually done anything at first because she was drunk and she’d fallen asleep right on top of me, but we’d woken up together in the middle of the night and then it was wonderful, although it only took about two minutes and I’d fallen asleep again right afterward, and the fifth night, when we’d gotten comfortable with each other and she’d farted a big fart right after she flopped over to the side of the bed that used to be Adela’s, and the sixth night, which was embarrassing at first because neither one of us really wanted to have sex but we knew we sort of had to at that stage in our relationship, because if the sex isn’t great at first then how does that bode for later on, and the seventh night, which to tell the truth I can’t quite distinguish from the fifth night or the rest of the sixth night after that embarrassing part, because after all sex is sex and it does sort of blur together, and of course the eighth night, just a couple of weeks ago but stamped in my memory forever because her phone rang just like in the movies, on cue while I was lying on my back catching my breath, and it was Joe, and he was afraid he’d be arrested because he’d been driving “very badly I think” as he kept repeating and as Rosie kept repeating to me as we drove out to rescue him, expecting vomit and maybe even a fight but finding only a sad sack of a guy pulled over in a cornfield, who could forget those eight nights, I’ll always remember them or at least I’ll try to, except that I’ve already forgotten the seventh night. When we found him sitting in his half-wrecked car he was less than half sober. I figured out he’d hit a tree and a fencepost and not a person or a car, and I suggested he go back with us and report the accident in the morning. I explained that, and he called me Boss. On the drive back he realized who I was, and demoted me from Boss to Professor and then to Lab Guy. Then he got rude about what Rosie and I had supposedly done, which we had, most of it anyway, and then he became sad and weepy, and by the time we were back in town Rosie was holding him, and I went back to my apartment, and that was the way things ended on the last night I slept with her.

This weekend was our third visit to the farm, and it will be my last. The drive took an hour. On Thursday there had been a deep snowfall, and Rosie drove carefully and slowly, keeping the tires in the tracks left by other cars. She gripped the wheel and a crystal together, so the crystal rotated whenever we turned. The topic of conversation was crystal clusters.

— They are the best way to heal a family, she told me, because they are like families themselves. All the crystals live together on one rock, and each individual crystal has her own unique energy pattern. They’re in harmony with one another. You know Albert has been so frazzled by all the work, his digestive system is ruined. I have small crystal clusters I need to sew into his clothes.

That was when I said something about how she might be a bit nuts.

— You know you’re the one that needs help, she said.

I was surprised she knew that, and I took the opportunity to tell her how I was planning to look at crystals in the big microscope when I got back.

— My own sort of healing, I said.

She reached over and patted me on the head.

When we got in Stuart Zachery took me out to see the new chicken. It had plucked half of Destructor’s feathers off. He said he was going to name it Bad Bad Plucker. Afterward I found Rosie in our room, breathless, sorting a big muslin bag of crystals she’d had in the trunk of the car. She told me to say I wouldn’t watch the football that evening, because I was going to go for a long walk after dinner, that it was okay, no one had to go with me, they all knew I was used to long solitary walks.

— After dark? I said. In the winter, in the snow?

— You have to sneak the bag outside, she said. Get my uncle’s shovel, go around the back so we don’t see you from the kitchen window. Then go bury these four big crystals way out at the far corners of the property. Pointing away from us. They will accumulate bad energy and project it out.

She handed me a bag with four enormous spears of rose quartz.

— Just follow that fence, she said, pointing out into the dark. Keep the woods on your left, it’ll be dark but you’ll be fine. At the end you’ll see a sign for Traveling Trees, that’s the next property over. The corner of our property is there. After that turn left, walk straight to the road, put one there, then walk down the road past our driveway, another half mile, up to a red pole, you’ll see it, put one there, then left into the fields, up to a black shed, you’ll see it, that’s the last corner. If the ground is hard frozen, put them under logs. Sharp points out, away from the property, away from the house. And then we have to forget them. You can’t ask me about them anymore. That is important. They are accumulators. We are going to have to forget they ever existed. Otherwise we will be connected to them, we’ll be in a mess of bad energy.

The walk took until after midnight, because I got lost. I failed to find the last corner of the property, so I threw the last crystal into a snowdrift.

The next day she took everyone shopping, and I had to dig with a pickaxe into the frozen ground and bury four heavy crystal clusters at the corners of the house.

On the drive back to Guelph, I decided that the person I thought I knew has been crowded out of her own mind by crystals. A crystal tumor is growing in her brain, pushing out the Rosie parts. I watched her driving, holding a crystal to the wheel, and I imagined the inside of her head, the brain matter being pushed slowly aside by euhedral crystals the color of garnet. The mineral part of her is inaccessible, but the remaining human part is warm. She wants to love her family, but the only way she can show it is by secretly curing them of diseases they don’t believe they have. I still care for her, or the part I recognize. But I decided I wouldn’t be seeing much of her from then on.3

It might have worked if I had said, At least you believe in your crystals, I don’t believe in what I’m doing, that’s why I’m pretty much lost. But I could see where that would go: she’d feel sorry for me, and try to heal me with Ember’s books.

I will spend the next few weeks looking at crystals. I’ll practice speaking a language that has nothing to do with life. Pleochroism, birefringence, Bravais lattices. Miller indices, triclinic axes, lattice vectors. I’ll study diagrams of crystal classes, tables of refractive indices, charts of interference colors. My runny thoughts will dry out like the mushrooms my mother saved. My cloudy vision, ruined by years of peering at droplets, will clear. I’ll see the world through crystalline eyes.

The samples in the Ward’s box have wonderful names. Gneiss, Quartz, Purpurite, Stilbite. Kankite, Arctite, Celsian. Pronouncing them is like speaking with minerals in my mouth. They’ll be my cast of characters. I won’t think about Adela or Fina, I’ll have Adelasite and Finatite instead. Viperine and Vipesh will be replaced by Meta-Uraninite and Sphene. Meta-Uraninite would be perfect for Viperine: he is a meta-creature, and there’s the usual obscenity in the word Uranus. Vipesh would be Sphene because he’s polished. Catherine has to be something aggressive, like Stibnite. Anneliese could be Galena because it’s everywhere, and it’s toxic. In place of Rosie I should have something lovely and unpronounceable like Tyuyamunite.

I’ll study their most delicate tints, get to know their intimate geometries. It might very well turn out that Meta-Uraninite is related to Tyuyamunite. They could even be twins! One of them might be a poison, that’s common enough with minerals.

I took the little glass sphere out of its place at the center of the uni­ver­sal stage, and sep­ara­ted its two halves. I chose an unl­abe­led thin section from the box. This one, I decided would be Vip­eri­ne. I put a droplet of gl­yce­rin on the flat faces of the lower hem­isp­here and settled the thin section on it, then a drop of oil, and then I fit the two halves of the sphere back tog­eth­er. The little round world screwed firmly into its home at the center of the uni­ver­sal stage.

Light came up through the tiny crystals. Viperine was ready for inspection.

I’d bought the universal stage on a whim, using half my salary for the last half year. I didn’t tell anyone. Agathe would see it as a distraction from my work, which is true enough. There is an instrument in her lab that does the same work as this, except that her machine is a plastic box with a green LCD display. There is no beauty to it, she just feeds it a mineral and gets back an ugly printout. Agathe would say the universal stage is a waste.

— It’s superseded, she’d say. if you want to dabble in my field, just come over and use my lab.

If Catherine ever saw the universal stage, she’d know exactly why I bought it. She’d say, Good luck with that, Samuel, you’re a neurotic mess, you know that, okay? She’d see the desperation of the thing. It is like those sextants and theodolites that idiotic executives put in their offices under bell jars, except that the universal stage isn’t a promise of successful navigation through the treacherous shoals of life. Catherine would get that right away, which makes the very thought of ever showing it to her completely out of the question.

But despite what Agathe and Catherine would say, the Universal Stage is indisputably beautiful, with its little world safe in a bubble of glass. I know it’s not magic, because there is no magic in the world, but it shows me what such a world could look like.

I look at microscopes with the same dim infantile fascination with which a billionaire contemplates a pile of gold bars. The same smug look as a physicist showing a colleague an equation the colleague can never understand. The same haughty expression as a child, playing on a beach, holding a stone he’s just found and thinking he has magical powers.

The three rings of the Zeiss UD 124 universal petrographic stage always rotate around their still center. They are the opposite of my family. Our gyres have widened and broken. Our heavens are broken open and our stars are spilled out on the floor.

I looked closely at the little Viperine crystal. It had a warm rust color, with streamers of iridescent tangerine. It seemed tremendously complex. It had leaves and fronds like a lichen, like something living after all.

I focused the microscope on just one facet, a minuscule rectangular prism at the very center. I rotated the stage to bring the tiny facet into alignment. There were numbers on the Wright arcs and Schmidt scales to write down: rotation 23.5°, right ascension -180.5°, declination 10°. Color second-order rust brown. Soon I would be able to determine the composition of the Viperine crystal. I would no longer need to think of Viperine as a perplexing unknown quantity: I’d have its crystal class, I’d know the names of its atoms. And like all crystals, it would have no gender,

An hour and several notebook pages later, I was back at my desk on the other side of the lab. The Viperine crystal turned out to be Stilbite, a monoclinic crystal. To me it sounds like she can still bite. It is a brittle mineral, and it fractures easily. The manual of mineralogy says it has high a Stilb index, meaning it shines brightly, on account of the pearly luster of the crystal’s {010} faces. It decomposes in hydrochloric acid, that’s good to know. And it has a property called diapheneity, which sounds seductive. I barely understood the mineral atlas, but it was satisfying to classify Viperine at last.

And that was enough, because I saw how empty the game was. If I spent the week looking at crystals, I could classify everyone I knew, but then what would I have? At least my mother didn’t imagine mushrooms are like people. I am in some deeper difficulty. My game isn’t just useless, like hers, it is fake. I can turn the rings of the Zeiss UD 124 universal rotary petrographic stage all I want: my family won’t snap back into order, my wandering life won’t make more sense than before.

I looked at the strange crystals, the microscope, its manuals and lenses, and realized just how hopeless my way of thinking really was. Martha had tried to do something like this, calculating her family with equations. She thought the world could be labeled in Latin. She thought physics could be applied to families. This was worse, because it was weaker. I knew it wasn’t real science. At first, when Fina was young, I didn’t care about the lab equipment. The standard Olympus microscopes were enough. Then I decided I needed the large one, not because I could do my job better, but because anything less intricate wouldn’t distract me from my family. And finally here I was, trying to understand a temendously complex mechanism that had nothing to do with waterborne diseases, hoping in a mixed-up way that it might help me understand the floating form of my life.

I had deliberately bought the universal stage even though I could hardly understand it, thinking its outlandish complexity would match my outlandish life. Somehow I’d understand people as minerals, as crystals. What I was doing violated some fundametal requirement of sanity. At the very least, people should be able to distinguish themselves from rocks. Even Rosie knew that.

A voice in me was asking, what is sadness? I have thought about my past, and it has evaporated before my eyes. I seem to believe I require machines to think about my life. It’s obvious what sadness is, or is it.

Part of my mind seemed intent on asking that question, so I decided I must be sad. But which part? Maybe the part that systematically lied to me over the years about my precious memories.

Or the part that can no longer use science to hide. I seem to have elaborately designed my life to keep me from thinking clearly about myself. I knew from the very first seminar back at the university that amoebas are a way of not thinking about people, but something in me stopped me from pursuing that thought. That was a very clever move on the part of some part of me, very subtle and devious. I knew in the first year that I was eventually going to let Adela go. But I knew it in a strange way, without thinking it. My thoughts about people are like when you see someone changing into a swimsuit on a beach. You can look, but it’s not right to stare, so after a moment you turn away.

I’d known these things about myself but only vaguely, complacently. So what is sadness really? It’s the sense you have that you haven’t made sense. Not knowing how to find the parts of you that caused your condition, how to introduce them to one another.

— Good morning, glad to meet you. You’re the part that has been working so hard making up stories to make me feel better. Thanks, I guess. But who told you to do that, anyway? And wait, where do you live, exactly?

— Sorry, who are you? Are you Samuel? I suppose I should know, I work for him. But he never comes around here. I just try to keep him in the lab. Whatever it takes to keep him together. Where did you come from?

— Not sure. I’m the one who knows something is wrong. Wait, hold on, who is that?

— Samuel, he says, but I’ve never believed it. I see him here sometimes. He comes into the lab when no one’s around. I see him on Cather, too, and on Lorck, he walks up and down by himself.

— I wish he’d stop moping, he’s never done us much good.

That’s what sadness is. I thought. It’s when it’s no longer clear who gets to be sad.

I disassembled the old Zeiss UD 124 universal rotary petrographic stage into its constituent parts. I cleaned each one according to Zeiss Manual E11, *Care and Cleaning*, using the supplied fluid and an antistatic cloth, wiping optical parts with no pressure.

Rosie was a strange thing that happened to me from October until March. She was sweet in an unhelpful way. I think she was struggling to understand what she would be without crystal healing. She wanted people to be healthier, warmer. I don’t want that, I prefer people to be colder. It’s not hard to see which of us was the worse off. She wanted to surround people with crystals, to cure them without their knowing. For a while at least, I wanted to see people as crystals, to paralyze them into minerals and numbers.

As the darkness grew deeper and the last colors left the sky over the river, I sat staring at the desk full of equipment. The rows of lenses, fasteners, and metal pieces kept speaking to me, silently and without meaning, like inscriptions in some ancient language, until I closed the lid.

**<Chapter 11 Mushrooms and Comets>**

I sat at the front table in the lab, with the light off. In the stillness I began to hear the voices of my family. Adela on the phone, telling me she’ll be staying away another two months, another three months. Like a chess player in perpetual retreat. Sacrificing the little pieces, pulling back the important ones. Castling. Huddling at the back of the board, shifting back and forth, pretending to play but really just killing time.

Tee, telling me I’m welcome at Christmas. He’s also castled. His stupendous Edifice of Success protects him from hordes of vermin who squirm in the muddy fields beyond the moat. Actually just two vermin, silent Alec and spineless Samuel. Tee paces, high on the ramparts. If the wind is right he can hear the pathetic squeals of his brother Samuel out on the poisoned swampland. Tee sings patriotic anthems to drown out the Samuel vermin, because every once in a while it squeaks a hurtful word, like “mother” or “family.”

Alec castled long ago, even before Tee and I stopped going to see him. He was there, but he wasn’t. His wife Karen talked about aerobics, the weather, or the dessert she’d made. She told us about her mother, who had found a good retirement community, and her daughter Emma, and Emma’s boyfriend Morris. One time Alec’s other daughter Sky was there with Marshall, whom she married a few years later. He told us about his business rehabbing inner-city apartments in Baltimore. It was the last Tee or I heard from any of them. We were as invisible to Alec’s family as they were to us. Tee says Alec has given up on life, but by life Tee means wealth.

It has occurred to me more than once—actually, it occurs to me whenever I think how poorly I understand people, which is often—that I can probably blame my inability to understand people on Martha, my mother. That might be the main thing I owe to her, the unwelcome bond that united us even when all the other things that could have connected us had broken.

If you’d asked me years ago, when I still lived at home in Watkins Glen, I might have said, Well, I don’t know what I owe to my mother, she’s my mother, right? I owe her the usual everything. If you’d asked me what I didn’t like about her, I might have said, When I get to her age I’m not going to pick fights with people. But if you’d kept at me, insisting that I say what I didn’t like, I would have admitted she didn’t understand people, mainly because she treated people like flaws. That’s an idea I wish I hadn’t gotten from her.

Once upon a time John enjoyed arguing with her because she was so ill-informed, and yet so strongly opinionated, about much of the world beyond the two things she knew with absolute authority: the species of Boletus mushrooms, and the celestial mechanics of comets. It never occurred to little Sam that anyone in the world could possibly hope to approach his mother’s authority on those two subjects. The signs of her expertise were all around the house in the form of books, offprints and photocopies, and in the shape of dried mushrooms, which populated every horizontal surface like those scenes in horror movies where the priest’s room is inexplicably filled with frogs or flies. On a typical summer day, freshly picked mushrooms might be drying on the window sills, on top of the television, and across the mantelpiece, where they surrounded an antique clock that my mother’s guests made a point of admiring because it was one of the last ordinary things in the house. Mushrooms in various stages of desiccation colonized the shelves in the two china cabinets. Mushrooms crowded around the stove as if they were keeping warm. Dozens had been given permanent places on the bookshelves in her bedroom. Those specimens were the most precious. Most had dried years ago into dust-gray shells, draped with filigree cobwebs.

I wouldn’t have thought to challenge her on her two special subjects. No one ever did. She curtly corrected Manfred Snell, the tall, curly-haired man from the State Agricultural Commission who came to see the specimens she’d found, and she made fun of an astronomer who visited from the university, telling him he shouldn’t rely so much on other people’s knowledge and admonishing him to try to learn things for himself. Later, when I was at the university, I realized there must be people in the world who knew more than my mother about her two subjects. I found out, for example, that mushrooms are identified by genetic analysis, and that their spores are studied using electron microscopes, things she either didn’t know about or didn’t trust. And I guessed that astronomers who study comets might be more interested in the origin of the solar system or the search for life than the geometry of orbits.

Science had moved on since she had learned it, but she hadn’t, and that was what made her such an irresistible target for John. Even though he couldn’t have been more than nine years old that first summer he visited, John had lots of ideas for her to argue against. He believed that some products made in Japan were probably of fairly good quality; that it was likely a few people from India were not lazy; and that probably quite a few Germans, especially including his own friend Dieter, were not secretly planning to start another war. My mother had never been interested in politics or history, and the little she’d learned was left over from her own teenage years in the decade following the Second World War.

That was all long ago, in that time somehow outside the years of my actual life, when there was a creature I call little Sam, because what else can I call someone who must have been me, but who has no connection to my life, a being who simply vanished sometime around my twelfth birthday, who disappeared so completely that he lives on only in my nearly empty memory—the very memory that keeps rejecting the notion that a single person can include both the one who vanished and the one who keeps thinking about the vanished one, the very person who can’t bring himself to say, with conviction, that little Sam was Samuel?

What was life like in that gap between the child and the man? Who answered to my name, lived my house, slept in my bed? How does a person disappear from himself, and then come back again? I am not a single person, and that seems wrong, and probably unhealthy.1

Butterflies and moths are like that: they live one life, then disappear into a cocoon and emerge as something entirey different. I wonder if butterflies and moths are haunted by memories of their lives as pupas. Perhaps they have uncomfortable dreams in which they can’t fly or even move. I wonder if pupas sleep inside their cocoons. If they do, then perhaps they have their own dreams. In a pupa’s dreams its body would be soft and green. The sun would be warm on its undulating back, there would be leaves to explore. Butterflies may even remember before they were pupas, all the way back to when they were caterpillars. Hard to imagine how disturbing that would be, and yet I feel the same dim disbelief thinking of little Sam: I was that? What happened to me?

Maybe there are dreams within dreams. Butterflies might be tortured by dreams of a time when they were legless and blind, twisting inside their round silk cages. And maybe, in those dreams, the butterflies know the pupas are dreaming of some earlier life in which they crawled along the edges of leaves. Would that be a consolation? Or another nightmare? Maybe that’s why butterflies have only rudimentary brains, because no creature could survive if it had nightmares inside its nightmares.

Butterflies are also lucky they never meet their mothers, because apparently the thought of a mother can survive, like a tiny parasite, through every transformation in life, from the egg all the way to the butterfly, ruining its days and infecting its best attempts at happiness.2

Decades have passed since my mother sat at her big metal desk in the living room, behind an irregular wall of books and papers, its crenelated top set with drying mushrooms like sentinels, creating the appearance of an ancient ruined fortress, her face entwined in swirls of cigarette smoke as if she was a great witch presiding over a haunted kingdom, while John paced back and forth and tried to find the right words, and stuttered, and got increasingly agitated.

— That’s just wrong, Mrs. Emmer, John would say.

And she would reply in that cool manner children can’t bear to hear in their own mothers, but that John mistook for actual calm.

— Well, John, I want evidence, that is all.

My mother was exceptionally acute when it came to logic. It was as if she heard people’s sentences as equations and solved them in her head, or worse, she thought people tried to speak in equations, but got it all wrong, and came out with incorrect solutions, or sloppy unconstrained inequalities, or hand-waving probabilistic estimates of things that are actually soluble, as if they thought their equations were brilliant and precise, whereas actually they knew virtually nothing about mathematics of any kind, even the difference between a variable and a constant, or the laws of association and distribution, that’s what she might have said if I’d ever pressed the point, but I never dared to ask things like that for fear of making some laughable error.

John would half-stutter and half-yell.

— Everyone knows Burma is called Myanmar! You don’t need evidence for something everyone knows!

— All I’m asking, and it’s all I’m asking, is just one newspaper clipping or one book written by an actual geographer, not your school book which was pretty clearly written by a moron.

John had a tendency to get over-excited, and then his stutter got worse and his mouth hung open. At school they made fun of him for that, but my mother never seemed to notice, and that was probably another reason why he liked her company.

The only thing that counted for her was what finally came out after the sputtering. “Your mind is all that matters,” she said to me on what seems like a couple of occasions but was probably dozens of lectures distributed over many years. “Think clearly,” she said, pronouncing clearly as if it were two words.

— Please remain rational, she said to John when he raged and fumed.

Boletus mushrooms, first of her two specialities, are not particularly appealing. They are thick and meaty. The underside of the cap has a delicate lacework that holds the spores. It is pocked and webbed like a sponge.

To my childish eyes that tissue under the cap seemed dangerously complex, like my mother’s mind, and it was also a secret space, the mushroom’s sex, if there was such a thing. If you looked at it too closely you got a kind of vertigo, as if you were plummeting into an endless labyrinth, a hedge maze made of fungus, the paths thick with potent spores. I knew, in the obscure way that children know, that the mushrooms my mother loved were images of her, and that it would have been significantly better for everyone concerned if she had liked dogs instead of mushrooms.

She had chosen Boletus mushrooms as her specialty because they are so difficult to identify. If you collect and eat wild mushrooms, like our family did, then it is important to get the Boletus mushrooms right, because some are deadly, and they look almost exactly like others that are edible.

— Mushrooms, my mother said, are not like flowers or birds. They are neither simple nor easy. You can’t hope to pick up a field guide to mushrooms, go off on a casual walk, find some nice specimens, match them to their color photos in a book, take them home, wash off the slugs, cook the caps in butter, and not spend the night clinging to the rim of a toilet and raising your exhausted, trembling, sweating head every five minutes so your next stream of watery vomit won’t run down your t-shirt like all the others have.

Boletus mushrooms require a lifetime of expertise, and even that isn’t enough, because some kinds exist in a gravitational anomaly in knowledge, that’s what she called it, a place where science doesn’t work. The mushrooms that live within the anomaly simply cannot be identified.

— They are outside language, she said. That is what makes them delicious.

You have to be an expert at her level in order to discern the subtle boundaries of the gravitational anomaly, to walk along the irregular border with both feet on the ground.

She could look at two mushrooms that seemed ordinary in all respects, each with the same bulbed stem and cap like those floppy velvet berets in Rembrandt paintings, and she’d say, “That one is poison,” and pick it up with a paper towel and deposit it in the garbage. Her voice was always sharp and sure. Sam used to watch in admiration, I remember, and I imagine that in some part of his mind he thought, It’s the same with people. You need to be an expert because some are poisonous.3

My mother took care of us by culling the forests and fields around Watkins Glen, identifying the poisonous mushrooms and feeding her family with the others. I never hesitated to eat the mushrooms she cooked, even though Tee and Alec had gotten ill several times, and once Alec had to have his stomach pumped and take iron supplements for months afterward.

I had felt queasy after several of our dinners, and one time I got horrible cramps. But when those things happened, Martha explained that the mushrooms I’d eaten were not chemically dangerous, but simply refused to be assimilated by all stomachs. She had not made any errors.

Our little family, which had been missing a father nearly long as I could remember, and which from Tee’s point of view had never had a father, went mushroom hunting most weekends, from the chill first days of April to the stony frosts in early November. We brought bags for the mushrooms and glassine envelopes for specimens that were rare or fragile, or possibly too poisonous to mix with the others. Alec was oldest, so he carried our lunches and ponchos. We walked in parks and golf courses, but we spent most of our time out in the countryside.

Martha parked as far off the road as she could, in order not to attract the attention of other mushroom hunters. We walked behind hedge rows and crossed farmers’ fields on our way to secret locations.

She made us each promise not to tell anyone where we went, even our closest friends, because a so-called friend might have a mother or father who is a mushroom hunter, and mushroom hunters, she told us, are crazy, every one of them, she said, including me, and we will do anything to know where the rare mushrooms can be found.

— That is why I always check the rearview mirror when we are going out, she told us once, after she’d startled us by quickly turning down a side road.

— That is why we always park off the road, so our car is hidden. And why you must never talk to anyone you see in the woods. We know where to go for the really rare species. No one else does.

— Would they hurt us? Tee asked, looking behind the car to see if we’d been spotted.

— Not you, they would hurt me. They would poison Harper if they thought I’d talk. These are my friends, the same people I meet at the mushroom fancier’s meetings, but they are actually my enemies. We tell each other we’re friends, but we really only care about mushrooms. If you love mushrooms you need knowledge, and I have more of that. So they hate and envy me. If you kids study, you can have knowledge like mine.

Our mushroom forays began early in the morning. The rarer species tended to be far away. Sometimes we’d drive an hour or more, out to Sugar Hill State Forest or past Franklin into farm country. We’d start on the big roads, but soon we’d be on roads with names like Rural Route 402, unpaved and scored with ruts and pits.

Eventually we’d turn onto the bumpy tracks loggers use in the forests. We’d park the car where it wouldn’t be seen, and then we’d spread out in both directions along the track, until we were as far apart as we could be and still see one other. Alec was always to Sam’s right. Tee was off to his left, and our mother beyond Tee, sometimes so far away little Sam couldn’t see her. Once we were all lined up, we’d walk into the woods, scanning right and left. Each of us had the responsibility of keeping the person to their right within sight, so we could sweep through the forest and not get lost.

When little Sam saw a mushroom he’d run up and collect it. If it was something special he’d put it in a glassine envelope and use a grease pencil to note the kind of trees that were nearby. Then he’d run back to his place in the line between Tee and Alec. They’d walk like that, in silence. Sometimes Sam would lose sight of Alec or Tee, but he made sure he could always hear them. That was easy enough in the late summer and fall, when twigs snapped underfoot. We followed our mother’s lead. If she scrambled down into a steep ravine, we had to go along, even if it meant one of us had to skirt around a cliff or push through a slope full of brambles. If she crossed a stream in a shallow place, we had to cross right where we were, even if it meant wading through a rapid current or swimming across a pool.

Some days we walked for hours, probably much longer than little children like Sam or Tee should walk.

Eventually our mother would call out to Tee that it was lunch time, and Tee would shout to Sam, and Sam to Alec, and we’d all converge. We sat on fallen logs or on the forest floor. Alec opened our packs and set out the lunches while our mother looked through our finds.

She put the common edible species, which she didn’t care about, in a large bag, and whatever she didn’t recognize in another. She’d make provisional identifications on the spot. Martha spoke a kind of poetry, stocked of Latin botanical terms like in her old mushroom manuals. Sam listened in admiration. Whose mother talks like that?

— The stem is solid, rufous at the top, two inches long. Pallid, rusty-brown color. The pileus is downy. No, pubescent. Nearly tomentose. The flesh is yellow, changes to steel blue when I bruise it. The stipe is rufous, marked with icterine.

Then she’d ask it:

— What are you?

Occasionally Tee or Alec would interrupt her with guesses, but mostly she talked to herself while we ate our sandwiches.

When she was puzzled she’d sit down and hold the mushroom like a mother cradling a sick child, close to her eyes, gently.

— You are very strange, she’d say. Your epidermis is cracked, and you’re covered with a mealy substance. Branny. No, granular. You have minute papillate warts. When I scratch them you bleed a milky fluid. You are matte, purplish-brown and chocolate, with a tinge of lilac.

Then she’d turn it over gently, like a child upending a kitten to see if it is male or female.

— Your tube surface is concave but you look stuffed. Your mouths are minute and round. Your stem is serpentine, cycneus. And minutely pruinose.

She might shake it and look at the spores in her hand. Sometimes she took a small bite, snipped it between her incisors, and spat it out.

— You’re acrid and woody. You’re unpleasant. You’re putrescent, and yet you have a hint of apricot.

She’d continue these soliloquies all through lunch, holding the mushrooms in front her like Hamlet with his skull. In the end she’d make a tentative identification.

— Provisionally, you are *cristosanguinus*. It’s early in the season, and you’re stunted or you’re fighting a chemical imbalance, but still you’re more *cristosanguinus* than anything. *Cristosanguinus*, first guess. *Pallidus*, second. *Felleus*, third.

When she had her mushrooms my mother was happy, or at least self-sufficient. She didn’t need to fret over her children, because they were reliable, a fact that reflected on her as much as on little Sam. She was like a bird singing by itself in the forest.4

On days when she was especially engrossed in her mushrooms, she would hold her sandwich in one hand and a mushroom in the other. I remember Tee whispering to Sam:

— Sandwich. Brown bread. Salami spotted with fatty globs. Pale creamy substance, possibly mayonnaise.

And Sam whispering back:

— Utterly inedible. Causes severe stomach cramps. Feed to Alec.

They howled, but she didn’t look up.

Mostly Sam and his brothers talked about school. Forays were a chance for Sam and Tee to find out what life was like for their older brother, who was always ahead of them in life. Even then, when our mother could have learned things about Alec’s life, she seldom asked. It was as if three grown-up brothers were out with a little child. When the brothers talked the child played by itself.

Over the years I absorbed a fair amount of information about mushrooms, but I never learned them. Sam was forever getting simple things wrong and making laughable errors in classification. His specialty was spotting the smaller species, the ones that hid in the moss or camouflaged themselves as bits of bark.

He took the usual sort of childish pride in that, partly because he was praised for it, but more because if he didn’t have his special talent he’d have to make an effort to learn the names.

To some degree, my choice of biology as a profession was a belated effort to earn my mother’s praise, even though as it turned out she admired the idea of biology, but had no interest at all in anything living except a few kinds of mushrooms.

Part of Sam’s lack of engagement came from his conviction, which he never articulated, that Boletus mushrooms are ugly even by mushroom standards. Mushrooms are always slightly repulsive, maybe because some are so obviously like penises with monstrous heads, but also because if you look closely enough, they are always decaying. Mushroom stems rot in an especially unattractive way. As they grow their skin becomes brittle and it tears, revealing spongy white flesh underneath. “Flaccid,” my mother called that condition, because that is a recognized mycological descriptor, and also “scrobiculate,” which sounds finicky and horrible at the same time.

It is odd I don’t like mushrooms, because I’m not disgusted by amoebas, which are far more disastrously decrepit, even diarrheic, by comparison. Probably my notion that mushrooms are ugly, that anyone should be naturally repulsed by things that resemble rotting penises, is just a reaction against the fact that my mother was always looking at mushrooms and not so often at her own children.

I have no memory of mushroom hunting when my father was alive. I do recall Tee was very young on our first outings, and had a hard time keeping up. All-day mushroom forays were Martha’s way of keeping her family with her and at the same time not talking to us, as if she was a lonely shepherdess in some old poem, dreaming of other days while she herded her three sheep farther and farther from home.

It seemed to me there were no beautiful mushrooms. The tops of the caps were often diseased. They were mucilaginous or greasy-looking or they had a condition resembling psoriasis. Some had scabs that wrinkled up and fell off, revealing pustulent pits infested with wet threadlike hyphae and fly larvae. I remember Sam felt the urge to scratch the caps, but he was squeamish about ripping off the flaky skin.

The undersides of the caps were peaty with the smell of reproduction, velvety, powdery soft, and always, even in the driest forest, moist but not soaking wet. If you looked close up at what was under the cap, you’d see the delicate veil of webbing, and in the crevices, tiny bulbs holding the spores. Very obviously sexual, and there was something attractive about all that, although I am still not sure what. Little Sam wouldn’t have said any of those things, because he didn’t think in the languorous nauseating way that I do. Sam felt without thinking too much. It may have occurred to him that mushrooms sometimes look like amputated penises stuck into the forest floor, because how could a little boy not think that, even just once? But he wouldn’t have been able to say much more. My mother may never have thought of the mushrooms’ sexual meanings. The tribe of Boleti may only have existed in her mind as a taxonomic puzzle.

When we came home after our forays she spent hours with her nose in the old monographs. She had a battered copy of Thomas Persoon’s *Catalogue of North American Boleti*, which had the best descriptions. Persoon collected in the 1910’s and ’20’s, and he had lived close to us, in Utica. We thought of him as a familiar spirit. It usually took an hour for her to consult Persoon’s book and the others, and we took advantage of that. She sat quietly with her mushrooms while we changed and showered.5

We were all expected to attend the identification sessions before dinner, and that’s when I learned the techniques of close observation that I’ve used ever since.

— You look at the unfamiliar object as intensely as you can, she said. In a minute you will see things, and then you will find the words that go with those things.

My brothers didn’t care about the lessons she wanted to teach us: for Tee, mushrooms were our mother’s foible, and I think that for Alec, dinner mattered more than identification. No matter how pustulent a mushroom looked, if was edible it would be tossed into the frying pan.

— Stringy, she said. Cap atrophic, stem inspissated and scabrous, flaccid. Words like those will lead you into the science.

Sam listened, but he was unsure. I would like to think he realized the sky is the opposite, since it has no parts, and names won’t help you understand it. Somehow he may have known that the sky is whatever mushrooms aren’t. Still, I parrot my mother’s advice to the interns in the lab. The more words you can find, I tell them, the more you’ll see. Soon you’ll be able to look at an amoeba and see a whole dictionary of technical terms.

The last fifteen years of her life, my mother lived by herself. Alec, Tee, and I used to drive down to see her. If the season was right we’d all go mushroom hunting. Tee stopped visiting after his son Powell was born, and about that time Alec began his disappearance, fading out of our lives like the apparition he’d always been. I stuck it out the longest. I was taking my mother on mushroom forays up until the year before she died. Toward the end we could only go to places where the mushrooms were just off the road. The last summer we’d drive along slowly, and when she saw something I’d jump out and collect whatever it was she’d seen.

When Alec and Tee were still visiting, we used to go mushroom hunting like we had when we were children. Sometimes we were out all day, because we knew our mother was at her best when she was almost, but not quite, by herself. When we got back she dumped the catch out on one side of the dinner table. On the other side Alec and I placed rows and columns of three-by-five inch cards. We went through the pile, tossing the ones we knew were edible into a big colander for washing, and setting the others out on the cards. Our little family worked quietly, like clerks sifting paperwork.

Dinner, which we ate around the kitchen table, always featured the edible mushrooms. Martha put mushrooms in spaghetti sauces and over steaks and burgers, and she boiled them in stews and fried them in butter.

Sometimes she made breaded mushrooms, or fish or chicken stuffed with mushrooms. I never learned to love the taste, but I had so many mushrooms over the years that I can eat them as if they are flavorless, like rice, like water. I could eat large plates of them without caring, without noticing.

Once dinner was cleared away, we went back to work. She brought out more mushroom monographs and we began the process of identifying what she called her difficult cases. She preferred older books like Persoon’s instead of the splashy color photographs of the modern field guides. Most of her books were English, but the best, like Mainhard Moser’s, used Latin. She read them under her breath, like a priest saying mass. She’d take up a mushroom and leaf through one of her monographs to find the right passage.

— Pileo ex ovato vel subconico expanso, margine tenui recurvo, glabro, glutinoso, saepe minute umbonato.

She might ask us to check the details.

— Is the pileus glabrous?

There were three kinds of glabrous. She didn’t need to list them, but she always did, the way other people’s mothers might recite proverbs like “Three strikes and you’re out” or, like Adela’s mother, “Three things can’t be hidden: the sun, the moon, and the truth.”

— There are three kinds of glabrous. Glabrescens: becoming bald, hairs or warts falling off. Glabrescent: looks bald but isn’t. Glabrate: smooth.

— Glabrate, Tee said, and waxy.

Colors, too, had their exacting vocabulary. You can’t just call a mushroom white. You have to know the difference between snow white, pure white, sheet white, chalk white, ivory white, cream white, milk white, and whitish. Albidus means the mushroom is white even though it has other colors in it. And the words for white have to be rigorously distinguished from the absence of color. Mushrooms with no color are called hyaline, glassy, watery, crystalline, pellucid, or diaphanous. If you look carefully, and keep seeing hints of color, but you can’t be sure, that would be incolor, or, even more exotically, achroos.

The differences could be crucial. The Death’s Angel, one of the most poisonous mushrooms in the world, was said to be milk-white or lacteus, which meant its white had the tiniest touch of blue. In the pages of her monographs distinctions were made between lacteus (a mushroom that exactly resembles a cup of milk), lacticolor (if it has the general color of milk), galactites (if it looks milky), galacticolor (if its color isn’t exactly like milk, but is less like anything else), and galachrous (if the mushroom has a milky feeling). A mushroom with any of those colors might be deadly. Some delicious mushrooms looked less like milk than like silver. They might be argentus (if they exactly resembled a polished piece of silver), argentaceous (if they had a silvery color), argentatus (if they seemed silvered), or argyraceus (if they seemed silvery).

If a whitish mushroom was old, it might be roborinus, the pale ungreen color of last year’s oak twigs, and in that case it would no longer be possible to make a determination.

Sam applied Martha’s words to the sky. The skies he loved were sheet-white and ever so slightly blue, like milk, lacteus. In the winter silvered, argentatus. Sometimes the sky was like paper or linen, and Martha gave him words for that: she said a mushroom that was dealbatus looked whitewashed or plastered, and had the texture of a wall. Cerussatus meant it looked like a white wall in a painting by an Old Master, done in white lead pigment. If it was argillaceous, it looked like kaolin, which she said was white clay.

My mother’s words were insoluble like blood clots: they would not dissolve into ordinary language. The world was invisibly labeled with those words, as if god had written names on everything, not just lions and tigers, but the tiniest moist tubercles of the most obscure mushrooms, until the world was ruined with words.

Once she was working on an especially disgusting mushroom, too old and damaged to properly identify. Its stalk was wrinkled and papery like an old person’s flabby arm. Part of its cap had been sheared away, maybe when a muskrat or a beaver took an exploratory bite and decided it wasn’t edible. The remaining portion had pale soft depressions like the skin on the heads of very old people, where the flesh just caves in.

— This is ridiculous, she said. If our descriptions are correct, which they obviously can’t be, this is a *pollux*, but that is completely impossible, because *pollux* is an Old World species.

She stared reproachfully at the mushroom.

— What in the world are you? she demanded.

The authorities who wrote the monographs were by definition faultless. The mysterious mushroom had somehow slipped out of its cage, which should have been escape proof: after all, it had been cast from pure intellect and locked with the hardest classical Latin. She took the specimen and held it under her architect’s lamp, turning it this way and that like a diamond merchant.

— You are inside the gravitational anomaly, she said, and put it aside for the man from the State Agricultural Commission.

I never told her, but I loved those moments. I was comforted when we were lost in the manuals, and content as soon as our failure was official. I liked the mushrooms that were put aside for the man from the State Agricultural Commission, because they hadn’t been killed by labels, and I respected the old manuals, because they were complex enough to snare my mother, to lead her into the labyrinth and leave her there. Each time she opened them I hoped the manuals would win, that they’d demonstrate there was a world larger than the one she knew, that she could go into the maze, but she couldn’t always hope to escape.6

One year there were persistent rains at the end of August, which brought out a crop of unusual species. Tee and I were visiting for the weekend. Alec had been there earlier in the summer. It later turned out that was his last visit to Watkins Glen. The three of us had been out for hours collecting specimens from a stretch of pine and oak woods that was usually bare at that time of year. There was a dense funk in the air when we emptied the mushrooms onto the table.

My mother picked a reddish one with a thin stem and began the interrogation. She put Moser’s *Keys to Agarics and Boleti of the Northeastern United States* on the table in front of her.

— Number 1. Our fungus is mature and has a fully open cap. We proceed to no. 2. The hymenophore is reticulate and so we must go on to no. 6.

She turned the mushroom over to examine the damp pockets where the spores were hanging. The underside of the cap was the most difficult part. The shapes of the moist mazes of spores were hard to understand. On some mushrooms the underside of the caps is protected by a hanging veil, like one of those spider webs shaped like a hammock, or like the sheet under the box springs of a bed that sags as it gathers dust.

— The flesh of our fungus is fragile, and the pores are thickish, and so we are led on to no. 7. The hymenophore is depressed around the stipe, so we proceed to no. 10.

Tee and I watched. She shook the mushroom, and a little cloud of spores surrounded her hand like smoke.

— The spore powder is white. The tube mouths are free and do not touch the stalk. On to no. 13. The cap and stipe of our fungus are almost definitely dry. Or slightly moist, or at most subhumid or humectant. So we can proceed to no. 15. But the cap is not branny, granular, or floury, so we go to no. 16.

She scratched the stem, and pieces fell off like dandruff.

— The base of the stipe shows flaky veil remnants, so we move on to no. 31. Is the hymenium yellow?

The old manuals were like branching mazes. Every paragraph was numbered, and each sentence was a choice, leading in two directions. Moser’s book was nearly four hundred pages long, and even she hadn’t memorized the whole thing. He was another ghost at our table, because he’d also lived in western New York State, and visited many of the places we went. His book was intimidating, with its thousands of numbered paragraphs and its difficult descriptions.

— We observe a well-developed ring, and so we go on to no. 94. Tee, we need a chemical test.

She cut a small slice off the cap with her X-ACTO knife, the same one she’d once used to cut one of the pads on Harper’s paw to remove a thorn. Tee put the piece of mushroom in a dish and added a drop of liquid from one of the little jars, each with a red rubber eyedrop lid, which my mother kept for testing mushrooms.

— Five minutes, she said. And then, in the silence:

— When Alec was here I had to do this myself.

— Why? Tee asked.

— He wasn’t talking much. I think he’s sad.

— You never know.

— We went out to Sand Hill Road, and we found lots of unusual species. *Paratus, versicolor, cordigulus*. I don’t think he was interested. When we got back he sat in the other room, reading the newspaper. He left early on the Monday. He said he had a long drive.

— Maybe he was going to Karen’s family in Maine.

— Was he always quiet? I asked. When he was little?

— You were the noisy one.

— We don’t know much about him these days, do we? I asked.

— Flesh turns brick-red under Meltzer’s reagent, Tee announced.

It hadn’t been five minutes, but the two of them knew that if they didn’t manage me, we’d end up talking about family issues, and that wasn’t how things were done.

— So we proceed to no. 113. Flesh bluish under Guaiac tincture?

She handed another slice to Tee.

He put two drops onto the piece of unknown mushroom. It would have been better from their point of view if there hadn’t been a second chemical test, because I wouldn’t have had a chance to cause more trouble, but I told myself I was being faithful to my mother, who had always taught us to investigate things diligently and systematically and not to stop until they were fully resolved.

— I don’t think Alec is sad, I said. I think he’s not engaged with us anymore. He doesn’t really care, that’s what I think.

— Of course he cares, my mother said.

Tee pretended to be examining the sample, but we all knew it wasn’t necessary. Guaiac is an easy test. Blue is the positive result, just like it was when Guaiac was used to find hidden blood in stool samples. It takes three minutes, and there isn’t any point in watching before the time is up.

— What makes you say he’s sad? I asked.

— It’s typical depressive behavior, she said. He got up late, didn’t talk, didn’t participate. He was listless, his eyes wandered, he didn’t eat much. His personal hygiene is slipping.

— What does that mean?

— He didn’t bring a change of clothes, for a two and a half day visit.

— Maybe he forgot.

— I am explaining to you these are typical symptoms of depression. Low body image, low body awareness. Lassitude. Low energy. Excessive sleep.

— Also symptoms of disengagement, if a person doesn’t care.

— Perhaps, yes.

She was energized by our rational discussion, never mind that the patient in question was one of her sons.

— But some symptoms, like excessive sleep, can’t be explained by just not caring.

Maybe she wanted to say she knew how Alec felt because she was his mother, but she couldn’t allow herself to say that, because it wasn’t an argument.

— When I said Alec seemed sad I meant he exhibited signs of depression. It wasn’t a judgment, and it wasn’t a hunch, it was a diagnosis.

— Blue, definitely, Tee said.

— Fine. Moser says that the volva should be free, less like a sheath than a veil. Ours is slightly free. To 129. Volva slightly rose-colored, more like a blush than a cut. Hard to tell. Go to no. 132.

It was always possible to come to undecidable options, things we couldn’t see. Over and over we made best guesses. It was important to remember the route, because we might need to retrace our steps. But which one was the wrong turn?

— A warty veil remains on the stipe, so we can move on to no. 143. Are there worms in the hymenia? Yes, definitely.

A minuscule worm tried to wriggle out of the base.

— Grub channels dark brown?

She pulled the worm out.

— No, this one is white. Hence 271 is our next number.

The tiny white worm writhed on one of Tee’s cards.

— Taste sweet?

She nibbled on the edge of the cap, and spat a shred of mushroom onto the table.

— No, acrid and spicy, and this takes us via 178 and 179 to no. 203. Moser says that the flesh, when bruised, discolors immediately, like bruises on a pear.

She scored the cap with her fingernail.

— Wound discolors slightly immediately, more in a minute. We go to 271. Does our fungus smell sweetish?

She turned it upside down and put her nose into the soft underside.

— No. On to no. 428. Smell floral? No. Go to no. 429. Smell weakly radish-like, then turning to a honey scent? No. To no. 430. Odor of rotting wood? No. Rancid cooking oil? No. On to no. 602. Smell fetid? No. To no. 603. Smell of gas from a stove? Definitely. On to no. 1432. We’re done. This is *Beloderma verrucosa*.

She twirled its stalk between her fingers.

— Verrucosa, she said again, as if to remind the mushroom.

Then it was time to look up the mushroom’s official description, which was recorded, in botanical Latin, in one of the enormous volumes of Moser’s magnum opus, *De Americae Septentrionalis boletes*.

She called out the description like a ritual, like a Latin Mass. It didn’t matter if we couldn’t really follow, because like parishioners, we usually knew the responses, and if we got lost she’d pick up the lead.

— Pori omnino liberi, she intoned, basi stipitem non attingentes, or else intervallo a stipite separati. Either that, or else pori subliberi, basi attenuati stipitem vix tangentes, or else pori adnati, margine rotundati, or else margine rectilinei.

She’d read quickly but reverently, the way people say the hymn, Gloria in excelsis Deo, et in terra pax hominibus bonæ voluntatis, except that she interrupted herself to celebrate her accuracy.

— Here is the description. Caro pilei rubescens ad brunneolam, cap flesh reddish to brownish, check. Interdum pallide purpurascens (raro). Rarely violaceous. We don’t see that. Caro contusa discolor evadit, flesh bruise-colored when wounded, check. Five to ten centimeters high. Yes. Reagente Meltzeri rubro-violaceus, red to purple under Meltzer’s reagent. Check. Sub tinctura Guaiaci caerulescens, blue under Guaiac. Check. In silvis mixtis et ad margines muscos, mixed woods and mossy banks. Of course.

Each identification gave her fresh pleasure. It was as if the mushroom had been living a meaningless life as a nameless fungus, anonymous in its forest, unseen, unsung, inodora and insapora, until we found it and identified it, and now it could be seen, draped in the glory of Latin words. Or maybe it was the other way around: the Latin language, which she associated with rigor and logic, had once again successfully explained something as lowly and formless as this mushroom.

The last part of the ritual of identification was the most obscure. She read the footnotes at the end of the official description, which listed the times and places the species had been positively identified by the great authorities. To my mother that was the genetic code of the mushroom, like the roster of the mushroom’s noble ancestors entered into the church log.

— Thomas Persoon, July 16, 1920, Forksville, New York, by Loyalsock Creek. Edward Somaini, he was magnificent, Aug. 12, 1934, in an open hillside pasture. There you have it! You are *Beloderma verrucosa*, a very well-attested mushroom.

— And you are poisonous, she added, spitting onto the card where the worm was struggling.7

I wrote the essential data on the mushroom’s three-by-five card. “August 29, 2004. Franklin, New York. *Beloderma verrucosa*. Moser, *Keys to Agarics and Boleti,* no. 1432, *De Americae Septentrionalis boletes,* vol. 3, p. 308.” She placed the mushroom on the card and took it into her bedroom, where she kept the rarest specimens. Tee and I got our coats, because that was a signal the day was over and we could go back to the Holiday Inn.

She kept the valuable specimens on shelves I later realized must have been emptied of my father’s books when he died. On the occasions when the man from the State Agricultural Commission visited, she would disappear into her bedroom and come out with a tray of dusty cards, each with a dried mushroom on it, as if she was a crazy version of a normal housewife, who would have appeared with a tray of tea cups and sweets.

Once, I saw the man from the State Agri­cult­ural Com­mis­sion take a sp­eci­men for further an­aly­sis in Albany. Months later, he ve­rif­ied my mo­the­r’s iden­tific­ation of it as the third known sp­eci­men of a new sp­eci­es, an en­orm­ous triumph for her. He pre­sen­ted her with a copy of the of­fic­ial notice. Her name was there, along with all the famous bot­ani­sts. She had the do­cum­ent framed, and it hung in the living room like a diploma.8

There was no further mention of Alec that weekend. She had diagnosed him, and that was all she would do. Like any mother, ours was interested in her children’s welfare, but she didn’t care as much about the details of our lives as about the clarity with which we explained ourselves, and especially the clarity of her own diagnoses.

I’m grateful, in the end, that she didn’t try to understand emotional issues. On another visit a few years after that one I took Fina with me. She was barely five, and we went on an early morning foray. My mother and I tried to get Fina interested in hunting for mushrooms. She had a little backpack, and we put three smal mushrooms in it. Mainly she was interested in picking flowers. At the breakfast table afterward we put her mushrooms in a pile with some crumpled daisies and buttercups. I gave her a bowl of Lucky Charms as a reward.

That summer my mother was already weak, even though she had another four years to live. She sat gripping her coffee in both hands and glaring at the mushrooms. I was glad Fina had the experience, I said, because she was nearly the same age I’d been when my father showed me his microscope.

— Those moments can be important, I said, hoping she would add something more about my father, or at least agree it was good that Fina had tried mushroom hunting.

— She won’t remember this, my mother said. Children understand very little. She doesn’t know what we did. She has no idea about the phyla, the biosphere, taxonomy. There is nothing in there yet.

She tapped the glabrous skin on Fina’s forehead.

— Later in life there may be. For now she just needs cereal.

Fina grabbed the box in case someone might snatch it away.

She might have been listening, the way little Sam sometimes had. It was likely she sensed how strange and combative her grandmother was. I put my finger to my lips to stop my mother from saying anything else.

Martha’s other interest, astronomy, was hers alone. She had four or five old chalkboards on wheels, which she’d bought at a charity shop. She’d stand in front of them, making astronomical calculations. She wrote rapidly, as if she was impatient. The chalk hit hard, and sometimes snapped against the board.

She could write for an hour at a time, filling a board, and then she’d flip it using the metal handles at the sides, write all over the back, wheel the board away and start on the next.

Her equations were mainly long numbers, some with lots of zeros. There were very large numbers, like 10,500,000, and also very small ones, like 0.00044. The numbers alternated with symbols, mostly Greek letters like Σ, Ω, α, δ, β, λ. Every couple of lines there were technical words, written in the German-style handwriting she’d learned as a child. “Object number,” I remember, with the m’s and n’s done in savage spikes, as if they were electric; and also “year of perihelion,” and “longitude of ascending node.” I recall those because over the years, when I came into the room and she was working, my eye fell naturally onto the few things written in English, like the way words like “Paris” or “New York” stand out when someone speaks a foreign language, except that the words I saw on her chalkboards were as incomprehensible as the symbols and numbers in which they were lodged.

I used to watch her making her calculations. Even her numbers looked strange: her 1’s had two legs, like tents. She wrote her 6’s as if they were tipping over. She crossed her 7’s. Her 9’s were sunk down, so the tails hung down like j’s.

For me, and perhaps for Tee and Alec, her calculations were the visible signs of her mind, a second-by-second transcription of the astonishing working of her brain. Yet at the same time, the chalkboards weren’t about her, they were about things in outer space. She was working furiously to transcribe the machinery of the heavens. She’d tell us that we could see a certain planet at twilight, or that an asteroid had just missed the Earth and was hurtling off into the galaxy. Mostly she worked in silence, scratching away at the chalkboard, breaking chalks, erasing and starting again, writing numbers in columns, stooping to fill the bottom of the board with smaller and smaller script. Occasionally she stopped to consult books and offprints. I wrote down the titles of two of them: James Craig Watson’s *Theoretical Astronomy*, bound in faded green cloth, and an offprint with a black cover, which she’d somehow stained with oil or butter, titled “Zweites Kurzes Identifizierungsnachweis der kleinen Planeten und Kometen,” written by Wolfram Pichler in 1938.

She struggled with her equations, and sometimes, as with the mushrooms, she lost. When she was having trouble she worked faster and faster and didn’t bother to erase her mistakes. She crossed out lines of calculations with large and small X’s. Her writing curved at the ends of the lines and ran up or down the edges of the board, because she didn’t want to stop even long enough to start another line. At the bottom of the chalkboard she might write “Epoch unknown,” or “Inclination unknown,” or “Orbit unresolved.” She’d underline those conclusions two or three times, ferociously.

Other times her calculations ended triumphantly. She’d write an equation with an exclamation mark: Ω = 110,000 years! And then she’d circle it and stab it with her chalk.

The fact that she was calculating the orbits of comets seemed especially awesome to little Sam and his friends, since they weren’t sure what that meant. When I was in high school and could understand a little better, she told me comets had been her speciality at the University of Potsdam. Back then, she explained, there were no calculators or computers. You had to be able to do it all yourself. You started with the photos the astronomers gave you, and then you just calculated. What? I asked. The orbit, she said: how steep an angle it comes in at, how closely it approaches the Sun or the Earth, whether it will ever return to the solar system. That takes a prodigious effort, she told me. It was something she was proud of, she didn’t mind admitting it, and a skill she was determined never to lose.

— You could give me the transit data, she said, not minding that I couldn’t understand. Or just the photos. You can put me in a room with a chalkboard, and two hours later I will tell you exactly when that comet will come back, whether it’s next year or five million years in the future. That is what we did in Potsdam. The observatories are still there. There is a famous one built for Einstein, but he never visited. I worked next to it, in the Michelson House. There were tombs of famous astronomers all around the building. Their headstones were up against the building, because they loved the observatory so much they never wanted to leave, even when they died. Some of the most prominent astronomers in the world worked there. I was a student of Alfred Bohrmann. He was a tyrant, he made me work like no one else ever has.

She glowed when she said those things, but it wasn’t a healthy glow.

— It is wonderful to calculate, she said, admiring one of her chalkboards.

It was labeled “Comet Schwassmann-Wachmann, 1937 1.” At the top left of the board she’d drawn a spreadsheet with three rows and three columns. The first column, she said, was time, labeled UTC. The second and third were astronomical coordinates, labeled α and δ. The table gave the positions of the comet on three different dates.

— This should have been a normal comet, she said, but it did not do what it was supposed to. It will never come back.

I was unfortunate because my mother owned the stars. Most people can look up at the night sky and think, Ah, that is the infinite universe, the blackness under which we all live. Or they can think, Ah, My first kiss, it was under the stars in Beshoygan Bay, Wisconsin. Or else, Ah, that is Heaven, where I will be going soon enough. But I was never able to look at stars and have dreamy thoughts, because my mother had colonized them. She knew their names: not just a few constellations, like most people, but all of them. She knew the names of the principal stars in each constellation, in Arabic or Latin, and she knew their numbers in the official catalog. She knew the NGC catalog names of the principal deep-sky objects. She knew all 110 Messier nebulae, and she used to show them to us, one after another, through a telescope she set up in the back yard, a few feet from the muddy pond where little Sam used to play. For her the starry sky was a stupendous, universe-sized book, written in a heavenly language, and she spoke it fluently. If she also believed the universe is a wondrous infinity or a romantic reminder of our lives and loves or the secret home of the angels, she never said so. She liked to look up at the starry sky and read out numbers and names. Because she knew those things, when I looked at the night sky nothing was left for me but my own ignorance.

At college I decided to take a class on celestial mechanics, hoping to be able to talk to her about her comets, and maybe even calculate along with her. On one visit back home before the semester started, when she was out shopping, I wrote down some of the things I saw on her chalkboards. On one board she’d noted the equations she wanted to use. “Orbit,” she’d written, next to:

And below that, “eccentricity e” and this equation:

Against the right edge of the board, in smaller symbols, she’d written “perihelion rp when Θ = 0,” and

I wrote that all down. The rest of the board was covered in numbers. At the bottom, as usual, she’d written her results. The comet would return to the night skies in Ω = 6,530 years. I wrote that down too.

Back at college, I compared what I’d copied to the textbook, and I found some of her equations. But the math was beyond me. The class turned out to be impossible, and I quit halfway through.

The next time I visited Watkins Glen, I mentioned some of the things I’d learned.

— I took a class on celestial mechanics, I ventured.

— Excellent, she said, without conviction.

I told her we’d learned to calculate solstices and equinoxes, and that there were lectures about comets. I said we’d learned about perihelions and eccentricities, and I had even tried some some calculations of planets and comets. The professor was very good, I added, and I might take some other class in future. I hoped that was enough, because it was almost all I’d learned.

— That’s good, she said.

— But I couldn’t follow the math, I said, just in case she might ask me to step up to the chalkboard and calculate something.

— It is difficult, she replied, not looking up from the board.9

I noticed that many of the comets she worked on had been observed in the 1930s and 1940s, and some were named after German astronomers. I wrote those down too. Dates in spring 1937 appeared on several chalkboards. At the bottom right of one board, pressed into a corner by the avalanche of calculations, she’d made a list of her results:

Comet Böhm 1937

First observation → 2 September 1937 11:07 UTC

Second observation → 4 September 1937 10:21 UTC

Third observation → 16 October 1937 03:06 UTC

Perihelion → 1.733065 AU

Eccentricity → 1.000237

Inclination → 41.3903 degrees

Period Ω → HYPERBOLIC

It seemed she was interested in the night sky as it was back in 1937, the year she was born. Hyperbolic meant the comet would never return to the Solar System.

Her compulsive collecting of mushrooms, her endless calculating of thve orbits of heavenly bodies: those were ways of creating sense. She named things that live unnoticed on the forest floor, she found numbers for objects that fly through incomprehensible tracts of empty space. Onto the frightening darkness that surrounds our pitifvul planet she drew lovely white lines, and she labeled the lines with numbers and symbols. She found soil-colored mushrooms in stretches of forest no one else visited. She brought them home, arranged them on cards, and united them with their Latin names.

Little Sam had been very proud of her. He’d shown her off to John, Mark, Billy, and other boys from school as if she was an apex predator in a zoo. His friends looked around the house, registering the sheer number of books and recoiling from the mushrooms arranged on every spare surface. That was probably a formative moment for some of them. Either something in their brains clicked, and they thought, Hey, I have to get a mother like Sam’s, I’m going to read books and be intimidating like Mrs. Emmer, or else they thought, Yikes, Sam’s mom is a nut, maybe even a psycho, I’d better pretend I like him or she’ll do something terrible to me. Some of the kids Sam invited never came back for a second visit. John was an exception: he tried to scale the fortress between himself and my mother, and kept at it until he, too, went off to college and who knows what.

My mother may have been a limited sort of genius, because she loved just a couple of things in the world with frightening intensity and devotion. By comparison to Martha, I thought, as I walked toward the center of town past Paxton, Edel, and Marimba, where everything is paved and there are no mushrooms, most of us are unfocused and mediocre.

In the lobby of my building the air was warm and comforting, and in the apartment the dark closed in around me. Outside a few clouds glowed in the city lights. If there were stars, I couldn’t see any.

**<Chapter 12 The Judgment>**

It was cold and windy, and I was tired. I’d spent the afternoon collecting samples of water from storm sewer catch basins and flooded construction ditches around the reservoir where the boy died from the fowleri infection. I’d managed to soak one foot completely while I was wading in a submerged mulched garden. The Water Department needs to be sure we won’t be cited for non-compliance of standards testing, and in practice, since no one can stop a single fowleri amoeba from finding its way into a swimmer’s nose and from there into the cribriform plate of that person’s skull and on into their brain, every month I have to go out and collect a hundred samples of water that I know have effectively no fowleri in them in order to provide the spurious comfort of large numbers of negative results. The back of the car is filled with small white bottles, each numbered with my indelible laundry marker.

As I drove back downtown I watched leaves being ripped from maple trees. Most trees haven’t turned color, but their time is up: it’s American Thanksgiving, and autumn needs to turn to winter. I am not looking forward to Tee’s party. Events like that are supposed to make you feel warm and happy, but Tee is like a cup of coffee that’s almost gone cold, and has just barely enough warmth to be drinkable.

The fitful winds and scouring-pad sky made me think of the final years in Watkins Glen, a period discolored by the day my mother decided to deliver her judgment, that’s how I think of it, although you could also call it a confession. She only delivered it once, but that was enough.

Even after I finished my graduate studies, I felt the residual childishness we all sometimes experience around our parents. At some point during each visit to Watkins Glen my resolve would weaken and I’d try to impress my mother with my accomplishments.

It hadn’t occurred to her that my chosen subject is more difficult than hers. Amoebas, I wanted to tell her, are harder to study than mushrooms. There are only a hundred kinds of Boletus mushrooms, but no one knows how many amoebas there are, or even if the concept of species is applicable to them. Amoebas trade genetic material even outside sexual reproduction. Mushrooms host other species of fungus, but amoebas host fungi, viruses, and bacteria, and they are themselves parasitic in many animals, including people.

When my speeches failed to elicit her admiration, I told her she’d inspired me to study biology, even though as far as I can see that isn’t true: I found my field because a professor at Colgate praised a paper I’d written and told me unicellular biology offered what he called “open career paths.”

On one visit I was telling her, once again, that the mushroom-hunting skills she’d taught me had helped in college. Sometimes my eyes got bloodshot at the microscope, I said, and I got backaches. But I kept at it, I learned the bacteria, the fungi, the amoebas, the things I would need for my job, and I am better at it thanks to the years you spent teaching us how to identify mushrooms.

— I don’t see the parallel, she said.

— Careful looking. Patience. You said that if something is new, the best tactic is just to spend time looking at it.

She didn’t answer, not, perhaps, because she disapproved or disagreed, but because silence was her way of registering skepticism in cases when she didn’t have enough information to object. She tapped her cigarette on the rim of a paint can lid she’d repurposed as an ashtray.

It wasn’t that I hadn’t learned anything from her mushroom lessons or her obsession with comets, it was more that her expertise was quite distant from the business of pipetting drain water into polyethylene bottles. I felt there was a connection, but I couldn’t put my finger on it. Then I got the idea to tell her about a class I’d had on the biology of blood. You have to look really closely at a blood smear, I told her. Under the microscope you see a field of small red disks, crowded together like buttons laid out in a single layer on a table. A few of them overlap, and one or two are on edge. Most are red cells, but every thousandth one is different. White blood cells stand out, I explained. They are larger. The problem is there are about twenty kinds, and they all look similar. Some have U-shaped nuclei, or nuclei segmented like sausages. The class taught me to see small variations, I told her, hoping that reminded her of the slight differences she was so proud of spotting in her mushrooms. The class was really difficult, I said. Sometimes I’d discover something, and I’d call out, “Professor Salah, I found a myelocyte!” or something like that. He came over, and in the beginning almost every time I was wrong. It turned out I had found something ordinary, just the way it happened on our mushroom forays.

— A couple of times he gave us special challenges, I told her. In one slide there were unexpected shapes inside the white blood cells, like worms growing inside eggs, and it turned out they were schizonts of malaria, the first I’d ever seen, immature stages of the malaria protozoan. The patient’s blood was infested by parasites. Professor Salah told me I was right, and asked me if I saw anything else. I looked, like you taught us, but I couldn’t make out anything else. He told me to look closely, and finally I saw it: the cells were also cancerous. They were infected by parasites, but they were also dying. Professor Salah said, “This is a case of plasma cell myeloma, the patient didn’t just have malaria, her body was full of tumors. She died a few weeks after this sample was taken.” Since then, I told my mother, I’ve seen a lot of parasites and blood infections, and my eye is sharp for that kind of thing.

She didn’t answer, so I added, pathetically, again, that was thanks to her.

I carried on my one-sided conversation about blood a while longer, and then I thought of a better example. At Emory I had a lab on botany, I said, and one week we studied wood under the microscope.

The Professor for that class brought in sections cut from logs, so we could analyze the rings. One tree had closely spaced rings near the center, indicating it had grown slowly when it was young, and then wider-spaced rings farther out. The Professor told us it was an oak tree, and he asked if we could interpret the change in growth.

It seemed to me she’d be interested in that because it was a puzzle. The Professor’s name was William Butor, I said, although actually I couldn’t remember. I told her Professor Butor said the answer was that oaks typically grow in forests, so when they’re young they are in the shade. They have to be tolerant of the shade until they are high enough to break through the forest canopy, and then, if they survive, they flourish.

She crushed her half-smoked cigarette onto the paint can lid and got a fresh one.

— Makes sense, she said.

Then, I told her, Butor showed us a cross section of a Scotch pine. My mother’s eyes widened ever so slightly: she realized my first example had been a warm-up. I was following her method, moving from elementary examples to harder ones.

The rings on the section of Scotch pine were widely spaced for the first part of its life, I told her, but then they drew very close together. The pine had nearly died. Even afterward the rings were narrowly spaced. Butor had us count the rings: there were 44 in all, I told my mother, even though I didn’t remember the number, and even though she must have realized I couldn’t have remembered such an exact number from that class, which had taken place over a decade before.

— He told us the tree had been cut down in 1976 when it was 44 years old, I said, which meant it had been planted in 1932, during the Great Depression. In fact, he told us it was part of a planting by a group of workers in a Civilian Conservation Camp, one of those organizations funded by the government to help America recover from the Depression. This particular tree was in the corner of an field behind an abandoned farm. The idea was to provide lumber for rebuilding the farm. The tree grew well until 1954, he told us, and that is when the rings began to narrow. What could cause such a thing? Leaf kill, he said, and subsequent recovery. He explained that a family of porcupines made their home in an old latrine in the corner of the field. Every morning they walked over to the pines and ate the bark down to the wood. They nearly killed the trees. In the end the porcupines were all poisoned to save the pines. But the trees were scarred and they never fully recovered.

— So what? my mother asked.

I should have remembered the story wasn’t puzzle, because there was no way we could have known about the porcupines.

I was like the Scotch pines, gnawed at by something, maybe almost killed. Tee was like the oak tree: he started out in Alec’s shade and got healthier as he went. I wished I could have said something like that, but with Martha it had to be facts and things and never people.

Then I decided to double down on my tree stories. I told her that Butor then brought out a cut section of black cherry. On one side, about halfway between the center and the bark, there was another set of rings, a second center. It looked like there was a second trunk inside the trunk. The main sequence of rings stretched around the rings of the smaller trunk. As the years went on and the tree added more rings they became less distorted, and the whole cross section was round like a normal tree.

— That was a branch of the tree, she said, and then the trunk grew around the branch and absorbed it.

— Exactly what I thought at the time, I said.

I’d gotten her attention at last. I told her Butor pointed out that when the tree absorbed that smaller trunk it grew very slowly for a while. The rings that wrapped around the smaller trunk were so close together they were hard to count. “For ten years,” Professor Butor said, “this tree struggled to live, and then it succeeded. It died at 92 years old; it was probably blown over in a storm. The question, Butor said, is why the tree had nearly died after it absorbed that branch. None of us knew. Then he drew our attention to the fact that the wood of the branch that had been absorbed was lighter than the rest of the cross section. “It is not a black cherry,” he said, “it is a white pine. The black cherry grew around the white pine, and the pine gave the cherry a violent reaction. It would be as if they replaced your liver with a monkey’s liver,” that’s what he said. He told us that every once in a while a tree kills another one by absorbing it.

— I doubt that explanation, she said.

I told her that Butor told us that different trees are toxic to each other, and that is why it is so rare that one species of tree is absorbed by another one.

— Well, I have never heard that. I think your professor was wrong.

Trees can grow close together in the forest, I said, so what Butor said explains why their branches don’t grow into other trees. Not like amoebas, some of them have branches that do grow into each other.

— Amoebas have nothing to do with it. I doubt trees are poisonous to each other. The story doesn’t sound right.

It occurred to me I had been telling her a story about myself, how I was like the branch that didn’t belong in the cut section, how she was like the mother, feeling poisoned by her child. I couldn’t tell her any of that, because she only ever talked about science, and never what it suggested, because if it suggested anything that meant you weren’t paying attention to the real world but only to your fantasies, and besides, she probably knew perfectly well that my stories, and hers, and all her mushroom and comet work, were all fantasies, ways she could tell herself stories about herself and her family, and she probably canceled those thoughts the instant they appeared to her.

In the rest of that class, I told her, we learned to identify trees by looking at thin sections of wood under the microscope.

— What’s the point of that? she asked. Trees can be identified without using a microscope.

I said Butor told us that there is a demand for people who study wood under the microscope because the the police sometimes need to identify wood fragments that are found at crime scenes. Then I remembered that Butor’s name wasn’t Butor, it was Bell, Professor Ann Bell, how could I have forgotten that, and where in the world did I get the name Butor? Maybe he was the person who taught the class on blood, but I didn’t have time to ponder that because I needed to explain that the class wasn’t about police work, it was just a science class, and that Professor Bell had in fact told us so when I asked her the exact same question my mother had just asked, and that was why I’d suddenly remembered her name. It occurred to me that the fact I’d asked the same question my mother asked was evidence that she had influenced my way of reasoning after all, but that was too complicated a story to tell just at that moment, especially because I was having trouble keeping track of which names I’d assigned to which Professors. At any rate, I decided, it was lucky I’d asked Professor Bell that question, because years later, sitting in Watkins Glen with my poor aging mother, my question, which was now her question, might finally let me make the connection I’d been hoping for.

— So it’s science for its own sake, my mother said.

I was energized by that, so I went on to tell her how I’d learned to identify trees by their microscopic cell structure. I emphasized how difficult it was. I described the different appearances of hardwoods and softwoods, and how the Professor, whom I was careful not to name in case I got confused again, even though I was almost certain her name was Ann Bell, or Beller, had told us that it is usually considered impossible to identify wood in microscopic slices to more than genus level. Species level identification, the Professor said, was for experts only. I repeated that, because as we both knew my mother had always insisted on identifying mushrooms to species, and whenever possible to subspecies and varietals. She seemed pleased with the implied comparison, or at least she was still listening, and then I remembered another story that had made an impression on me. I didn’t especially want to keep talking about wood, or blood for that matter, but factual discussions were the only way to keep my mother’s attention.

— One day, I told her, the Professor showed us a cross section of a softwood, a Southern yellow pine, felled in Coffee County, Georgia. At the center of the cross section, when the tree was young, it showed widely spaced growth rings, five or ten of them, and then all of a sudden the rings got very narrow, and the slow growth continued for about ten years. What could have caused that? she asked us. It wasn’t drought, because where this species grows there is plenty of rainfall. And it wasn’t lack of sunlight, because if larger trees had shaded this pine, the effect would have been gradual. It wasn’t porcupines, for the same reason, because the change was too sudden. The tree had nearly died in the course of one season. The change, she said, must show the effect of a complete defoliation. Something had removed all the tree’s needles.

— I thought you said the Professor’s name was William, my mother said.

— Right, I said, that’s funny. Ann, her name was Ann Butor. So only two things can defoliate a tree that quickly: insects and fire, and it wasn’t insects, because there were no recorded infestations in those years. It was fire, she said, and she had verified it by counting the rings to see what year it was when the pine had almost died. She determined it was 1982, then she drove down to Coffee County, which was two hours from Emory, and looked at the county records, and she discovered that a forest fire had burned over fifty square miles of land near the town of Ambrose. So there, she said: history in a tree trunk. Someone in the lab asked what happened to the tree, when it had been cut. She said the tree recovered slowly from the fire. It struggled for another fifteen years, and then a logging concern bought the land and clear-cut it in 1998. She told us she bought a cord of the wood, just to study it, and so we could all see what happens when a tree nearly dies.

— Okay, so trees nearly die in fires. What is the point?

— That’s what she told us, I said.

I was at a loss, because I realized that story wasn’t even as interesting as the porcupine one, and that I’d told it out of order, I should have saved the black cherry for last. I also realized it was another story about me: I’d remembered it because I identified with the tree that had nearly died. I was flustered, as I often was with my mother, and she was silent, as she typically was when someone was flailing. I told her that despite what the Professor said about not being able to identify trees under the microscope, I had actually identified two, a white oak and a slippery elm.

— Fine, she said.

It was odd, I realized, that I’d just told a story about a fatal blood disease and then four stories about trees that nearly died. Dying was on my mind, because I was back home visiting my mother, who seemed less and less well each time I saw her. She was undoubtedly acutely aware of that, too, and it would only make things worse if I thought of a story about a healthy plant or a normal blood condition. I could have left it there, but that day I kept going.

— Your mushrooms inspired me, I said again. I know I’ve never been very good at them, but you did teach me how to concentrate.

— Right.

— How to be persistent and methodical.

— Okay, she said, but her eyes were cold.

— As accurate as possible over as long a period as possible.

— Okay, she said, but she wasn’t listening. That wasn’t unusual in itself, because she seldom paid full attention unless there was some claim that seemed dubious, a fact that could be checked, or some assertion that needed to be challenged in case it was the thin edge of sloppy thinking. Looking back on it, I realize I should have kept going with stories like I usually did, because that was when she opened up, and all of a sudden told me everything.

— You need to know about Nicholas, she said.

Cold trickled down my back, as if she’d dropped an eel under my collar. Nicholas was her first husband, and I had never heard more than a sentence about him.

— Okay, I said, because what else could I say, and then she just started talking.

— Nicholas was handsome. Everyone said so. He was tall. He had dark hair that fell over his eyes.

— Oh, I said, because what else could a son say? My father, her second husband, hadn’t been tall. He had short hair.

— I married Nicholas in Frankfurt on a warm windy day.

She paused, and looked at her hand.

— We shared an apartment with other students, because Nicholas was still in school. We went to Tunisia for our honeymoon. It was very poor there. We saw beggars, and Nicholas told me we were nearly as poor as they were. We were very happy. We moved to Potsdam, into a tiny apartment. That’s where I learned astronomy.

She looked at me with a glassy stare made even more disconcerting by her cataracts.

My mind filled with questions. I wanted to ask her: Was he an astronomer? How did you meet? Why were you married in Frankfurt? How long were you together? Why are you telling me this? And why are you telling me this now? But I was afraid to break the spell.

— Once, I went out and spent the equivalent of three dollars on a candle, a tin candle holder, and a packet of paper napkins with red roses stamped on them. I laid out a perfect table, using the napkins as a tablecloth, but when Nicholas came home and saw it, he got very quiet and serious. He said, “Please fold up the napkins and take everything back to the store.”` I was very sorry. I saw what I had done. I folded up the napkins and I took them back to the store. That’s how poor we were.

I was afraid to hear any more, because I sensed something was about to break. Napkins weren’t the point, and there was always a point. I was thirty-four years old then, and I’d gone my whole life without knowing even this much about Nicholas. She was aiming at something.

— I loved him.

She spoke in her determined, loud voice, the one that meant that what she was saying posed a danger to her own composure, that the words had to be spoken clearly and naturally in order to make it sound like they were part of ordinary life, whereas actually they were the farthest possible thing from everyday life: they were the secret that made it possible to keep going at all. She sounded harsh and frightened.

I was about to tell her she didn’t need to say more, but she prevented me from speaking with a stony stare.

— She was a lovely girl, she said.

Her daughter who had died, she meant, the rarest of all subjects to occur in her conversation. The reference shone for me like the sliver of gold that appears in the muck at the bottom of a miner’s pan. If she doesn’t tell me my half-sister’s name now, I thought, she probably never will.

— She had curls, just a few, like a man who’s gone bald, but there was a tuft here in front. When she smiled her eyes rolled sideways, from happiness. She would have been a happy child.

She looked at a place next to me where there was no chair.

— She was one year and two months old when she died, and Nicholas was thirty-one.

She recited the numbers as if they were the weather. Then she was silent. I guessed she was thinking, as I was, about how old her daughter would have been if she’d lived—she’d still be in her forties—and then she looked back at me. She hadn’t yet said what she needed to say.

Again I made a move to speak, intending to say something that would keep her on the subject long enough so I could hear my half-sister’s name.

— I always wanted to be an astronomer, she said, cutting me off, ever since I was little, but after the accident I couldn’t keep going with it. I needed to move away from Germany. As you know I went to New York City and started over. In 1961 I got a job in the Botanical Garden in the Bronx, tending the flower garden in the summer and the tropical plants in the winter. I enrolled in botany classes across the street at Fordham University. I studied mushrooms. I liked them because they reminded of my childhood. In the summers, our family used to stay in a cabin in the Hohe Schrecke. Toward the end of the war, I used to wander off and pick mushrooms for my mother to cook.

Then I couldn’t resist interrupting, because mushrooms were safe ground.

— You were happy as a child? Is that why you got so interested in mushrooms?

— No. My childhood was terrible. For many years I felt hopeless. Being out in the forest by myself made me feel like I could make my life my own.

I felt the lameness of the weak son who fails, at the crucial moment, after years of rehearsal, to ask the right question.

— It was wonderful to work in the botanical Garden. I was by myself almost all the time, with plants all around. I used to go across the street and sit in the back of the classes, learning about the plants I was caring for.

— Why weren’t you happy as a child?

It was another poor question, I realized as soon as I asked it. I had thought, stupidly, that I could start a safer conversation about her distant childhood, and work forward toward the tragedy.

— Because my parents were monsters. Why else is any child unhappy? Those years in the Bronx were like heaven. I would have stayed, I would have expanded those two years into a whole lifetime.

— But then you married my father.

I wanted to know everything, and I desperately wanted to know the name of the little girl who would have been my half-sister, but I understood that what she had told me was exactly and only what she could, that it had taken her thirty-four years to say it, and that there was no chance that I could alter her plan. And I knew she had something more in mind.

— I married your father. A few years later we moved here. It was good for me, because there are dark skies full of stars and miles of woods where mushrooms grow. I am happy enough. Nothing ends the way you like. I still have my science, my twin obsessions, as Alec calls them. They are open windows for me. Boletus mushrooms let me look back into my time of freedom, in the forests of the Hohe Schrecke, and my astronomical calculations give me a view back to my first life, my first marriage in Potsdam. Those are the people I love. Those are the places where I live. Not here.

She smiled a ferocious triumphant smile, as if to say, There, I’ve said it. I care for you and Tee and Alec, and I was happy enough with your father, but I loved my first husband Nicholas and our little baby, and they broke my heart, and it will never be mended, so you need to understand that this house of mushrooms and chalkboards is what I have left. There is no connection between us, Samuel, that is what her story meant.1

She got up and went into Alec’s old room, where she did her astronomical calculations, and in a minute I heard the tapping and squealing of her chalk on a blackboard.

Her smile had said all that, and she knew it did. It hurt me so much to see that expression that I left. I drove straight back to Guelph, and it hurt much worse that night, when I was lying sleepless in bed. I felt something then that I hope I never feel again: a scratching on the top of my head, as if someone was parting my hair to see something. Then it was as if that person pried my skull apart and unzipped me into two uneven parts, and each part looked at the other with one astonished eye.

She had needed to tell me I’d gotten her fundamentally wrong. I’d always thought she loved her strange hobbies. One of my friends once called them outpourings of an active mind. That’s what people say when they can’t understand how someone thinks.

After that day I realized her astronomy and her botany were frantic attempts to escape her ruined present. They didn’t give her pleasure the way I’d imagined. They were drugs to manage her pain. She wheeled her chalkboards from room to room like those carts in hospitals that hold the intravenous drips. Her hundreds of mushrooms were like mummies, the whole house was an Egyptian tomb, littered with ritual objects and incomprehensible writing. By comparison my amoebas are a half-hearted pastime. I saw how heartbroken she was, how little common ground there was between us.

My mother lived another four years after that, but she never mentioned Nicholas or her daughter again. She knew the damage she’d done. I kept visiting, telling her what I’d learned from her, saying she’d taught me how to look closely, that she’d inspired me to be a scientist. Usually she didn’t answer. We both knew she wasn’t really in Watkins Glen. She was in Potsdam, in her twenties, her mind filled with stars and planets and her new husband and baby daughter, or she was in a classroom in the Bronx, sitting in a lecture, feeling what she’d called her freedom. What a thing to say about living alone the year after your husband has died. “Those years in the Bronx were like heaven,” she’d said, and in the end that was what hurt the most.

Or she was a little girl in Germany, escaping her parents by walking in the woods. Even though I could never tell her, because she’d refuse to understand, that was how we actually were connected, because when I was that age I’d been out in our back yard, looking up at the sky, and now I was again living alone, I with my microscope and she with her chalk boards.

Some people live the best part of their lives when they’re young, and later, when those parts of their lives are gone, they live on, into new years, decades and places where they don’t really belong. For them the world appears empty, but also full of an entrancing blankness. My mother never said she didn’t love me, my father, or my brothers: she loved us in her way, which was to teach us how to think, so we could survive if something happened to us like had happened to her.

After that day I also saw what I looked like to her. I was a transparent guest. I visited but I wasn’t really there. We had both disappeared. She was in the room, talking, but really she was somewhere else, plotting the paths of comets, rehearsing the language of mushrooms. She had been hurt too badly and too long ago ever to give herself permission to return.

When she died it fell to me and Tee to clean the house. It was a daunting job. As each of her sons in turn went off to college, she had colonized our rooms, filling them with desks and cabinets, putting up metal shelving to hold her scientific journals. My room had become an astronomer’s study. A metal desk from a used office furniture outlet occupied the area where my bed had been. In one corner was a teetering skyscraper of bound copies of astronomical journals, discarded from some library, with their call numbers still on the spines. In another was one of her telescopes, an ungainly thing covered with a waxy translucent plastic shroud, itself covered by a diaphanous pelt of dust. The wallpaper was a childish pattern of five-pointed stars, shooting stars, and crescent moons. I had forgotten she gave little Sam stars to look at when he fell asleep.2

Alec’s room was where she did her calculating. Two of her rolling chalkboards were pushed against the window wall, blocking the light. She had bought a low cabinet with map drawers to hold her celestial atlases. On top she’d piled star charts, boxes of chalk and pencils, drafting compasses, and rulers. Two boxes of telescope parts and a power strip sat on a nightstand. Three or four more rolling chalkboards crowded the room like people jammed into an elevator.

Tee’s old room was the botany archive. She’d put wooden bookshelves on all the walls. The closet doors had been removed to make room for more shelves. A small desk was pushed into one of the closets. In the middle of the room, where Tee’s bed had been, was our father’s old armchair, with its standing lamp. Her own papers were piled on the floor around it.

Her bedroom was a mushroom mausoleum. The rarest finds we’d made over the years were arranged on bookshelves on the wall opposite the bed. I remembered again that my father once had his books in there, but I was too young to read them, and when he died my mother got rid of all his books. The contents of his library was one of the lifetime of things I could have asked her about, but never did. Each dried mushroom specimen rested on a three-by-five card. They were all dated, and some of the dates went back to my childhood.

“*Acerrimus placatus* / Slaterville Springs, June 1991 / Under white oak.” That would have been when I was off at college, maybe when I was hitchhiking to the Yukon. She would have gone out by herself, or with Tee.

“*Pelabrisius leischalii* / Brooktondale, May 2003 / Near Acer.” Just a couple of years before her speech about Nicholas. Back when I thought I understood her.

“*Ovolatus perrimus* (??) / Forest Home, June 1977 / Mixed deciduous forest, among Christmas ferns.” I was only six years old when she found that. It was less than a year after my father died. Forest Home was near our house, so maybe my mother had taken me along. What had it been like for her that spring? The house suddenly half empty, three boys, one only a toddler. There were probably many short walks that year. I don’t remember any of them.

On the far side of the bed was a wooden writing desk stacked with boxes of mushrooms, labeled with Latin names as if they were shipping addresses:

On her nightstand were pills and some old astronomy books in German. Books were scattered on the floor, left where she’d dropped them. There were no newspapers, paperbacks, television, or paintings, and no framed photos of the family.

Tee and I went from room to room taking dried mushrooms off shelves, tables, and window sills, and putting them into large black garbage bags. I asked Tee if he realized our mother had so many desks in different rooms, and he said, “No, it’s amazing,” but in a tone that meant, Please let’s not talk about it.

As we worked the air filled with mushroom-scented dust, which hydrated in our noses into a pungent stew of half-remembered days and years. It was a good thing I wasn’t crying, because my tears would have left mushroom-colored trails on my cheeks, and Tee would have shaken his head in that way he did.

The hallway that led to the back yard had been used as storage for overflow books. She had stacked them on the floor on either side, then piled them up until they reached head height. She’d put more up against those piles, with the result that the hallway was like a narrow gully with steep slopes on either side.

The smallest books perched on top, just at the limit of what she could have reached on tip-toe, leaning against the tilting walls formed of heavier books. I imagined her stretching to reach the highest books, steadying herself with one hand, and then I pictured her slipping. It must have happened, and it would have caused a landslide of books. I could see her lying at the bottom of the gully, swearing. Tee said she couldn’t have retrieved the heavier books, the ones near the bottom.

He swept armfuls of books into a wheelbarrow.

— She was a compulsive collector, he said. A hoarder.

When he came back in with the wheelbarrow empty, he stood a moment, hands on hips.

— She actually read very little, he said. She knew very little.

I pointed out that the papers and journals in most rooms were all marked up, and the books had bookmarks and turned-down pages. The old German astronomy manuals on her bedside table had clearly been read for years.

— Those are just the bits and pieces she read. You know that, Samuel.

I thought of defending her, but he was determined to see her as a kind of fraud. He said she had never published or worked in a lab, so she was only a hobbyist. He had assigned himself the unassailable role of sensible older brother, even though he was younger, and that left me the unrewarding part of the naive younger sibling who witlessly defends the family’s honor. But why defend a mother who had let me know she’d never really loved our family, that she spent her time trying to control her despair over losing people I’d never even known? I wondered if Tee knew more about Nicholas and the baby girl, but there was no point in asking. Tee wouldn’t want to think about it, wouldn’t answer if he knew. His success was dependent on flawlessly avoiding whatever conflicted thoughts he still had about our family, pretending to remember only trivial or humorous episodes from our past.

A couple of years before our mother died, Cayla, Tee, and I were having dinner. Cayla was concerned about my mother’s health. It wasn’t perfect, as she put it, that she was in that house all by herself. Tee stopped her and announced his diagnosis. Martha, he said, is self-sufficient. She does what she needs to keep herself occupied. We just have to check in on her periodically. If she says she needs more books or blackboards, we get them. It’s not our business any more to worry about her. She has her jigsaw puzzles and books, he said, she has her chalkboards, that’s all she needs.

That was around the time Tee’s company went public, and he had begun to circulate in levels of society that Adela and I couldn’t picture. The speech was his way of closing the case so he could get on with his accelerating life. After that I mostly visited Watkins Glen without him.

It took three days to clear out the house. We had a garbage skip delivered, set down as close to the front door as possible. First we got to work emptying the kitchen. The pantry turned out to have five fifty-pound bags of flour, which she’d stockpiled to make bread, and two storage freezers full of vegetables. After we hauled those out, we decided to go back to our hotel and clean up. The next day we began again, using the wheelbarrow to cart out loads of books and papers. I was watching for family letters and photos, and perhaps Tee was too, but that day we found nothing but more evidence of our mother’s tenacious grip on her chosen subjects. There were printouts of astronomers’ biographies, and a box of old publications in German from the physics department at the university of Potsdam. Another box had letters from people at the New York State Agricultural Commission, saying things like “Dear Mrs. Martha Apperson, We are sorry to inform you we cannot identify the specimen you kindly forwarded to us with the tentative identification Boletus speciosus subspecies anagrammata, as described in Myron Elisa Hard’s Mushrooms Edible and Poisonous. We will keep it, together with the two possible Stellatus specimens, in the annex until such time as you can retrieve them.”

By the end of the second day we had cleared most of the house. I filled a box with some of her books to take back to the lab. The only things left were the bathrooms and two coat closets, and it was in the second closet that we found a box of typescripts and handwritten letters. We brought it out to the kitchen table and stood over it, taking things out one after another. There were typescripts of essays she’d written, mostly about astronomy but with our names mixed in. None were finished. I put some aside for myself.

— Notes for her lectures to us, Tee said, and he tossed the rest in the garbage.

There was a bundle of letters in German from someone named Wolfram Pichler. They were long letters. There were two very small photographs, no bigger than postage stamps, of astronomical observatories, possibly in Germany. There was a child’s crayon drawing on a large sheet of construction paper.

— Alec’s, Tee said.

I wondered if we should call and tell him about it, that she’d kept it in a special box all those years.

— He wouldn’t answer. He wouldn’t want it.

The drawing showed the planets, each with a person on it, Little Prince style. People waved their stick hands and twig fingers at each other across the starry heavens. The person on Jupiter had a bow and arrow with heart-shaped arrowheads. Martha may have taught Alec astronomy when I was too young to remember.

There was another sheaf of letters, tied with a ribbon. The knot was old and tight. Tee pulled with both hands until the ribbon snapped. They were dated 1964 and 1965. The first was written with a soft pencil in wild uneven handwriting. Tee read out a few lines: “I can’t believe I still have this cold. But I promise I will be better by Wednesday at 10:30. I love you, Martha!”

— Her love letters, from father, Tee said. We shouldn’t read them, right?

I didn’t answer, and Tee dropped them all into the garbage. He was working quickly. What was he looking for? If he didn’t want to keep anything of hers, why go through the box at all? We found a toy rifle, about three inches long, in metal with a wooden stock. The trigger moved, and made a snapping noise.

— Yours? I asked.

— Maybe Alec’s?

We took turns inspecting it. It was exceptionally well made, more a museum piece than a toy.

The only other papers in the box were utility bills. I stood by while Tee examined them, because he was in charge of everything to do with the sale of the house. He put a couple aside.

We kept going. I felt a sinking feeling: we were emptying out the last traces of her life, and there wasn’t anything in it.

There was her diploma: Master of Science in Botanical Sciences, Fordham University, 1963. At the bottom of the box were two metal toy soldiers with round helmets, maybe from the First World War, along with a glassine envelope of cards to help children memorize the names of flowers, each with a painting of a flower on the front and its name on the back. The last item in the box was heavy metal bracelet chain, darkened with age, engraved with the initials WP in elaborate script. Tee looked at me for permission, and put the entire box in the garbage bag.

We worked on into the evening, carting out the contents of the bathrooms and utility cabinets. I felt it was good my mother had kept some love letters, even though we’d decided to throw them away, but it just wasn’t normal not to have family photos. And where were the letters from Nicholas? And the photograph I had most wanted to find, the one of their baby daughter?

Tee was relieved. We finished after dark and went to a fast food place for dinner. There was a mist the next morning when we came back to sweep up and close the house.

Our suitcases were in the rental car. As soon as we finished cleaning, we’d drive to the airport and fly off to our different cities. The local real estate agent had the keys and would handle the sale. We’d probably never come back. I decided, suddenly, to go out to see the mulberry tree. I wanted to stand in the same place I’d stood forty years before.

There was a late-winter thaw, and the yard looked wrecked. It was splotched with lumps of snow and pools of meltwater choked with flooded grass. The pond had grown into a swamp, filled with the dead stalks of cattails. The place looked drowned, ruined. On one side were the pines my mother had told me were planted the year I was born. They were old now, scarred with crystals of white pitch. Many of their branches were dead. Some trees were almost bare. How odd, to look at trees that are your age and see them dying.

In the decades since Sam had played in the yard, the mulberry had grown large and rangy. Its irregular branches splayed out over the spot where Sam had stood. I wanted to stand there, so I crouched down and crept in under the branches. I glanced into the house to make sure Tee didn’t see me.

From my vantage point down there, probably at little Sam’s head height, I gave the yard a last lingering look, but there was nothing left to recognize except the house, where my mother had once argued with John, and where Tee was sweeping the floor with vigorous impatient movements. It was as if a tsunami had poured over the place, and it’d been underwater for years, and then the water finally drained away and revealed that everything was ruined.

I went back into the house. We locked the front door, and Tee backed us out of the driveway.3

I was thinking of all that as I drove back to the Department. When I pulled into the parking lot it was nearly dark. The wind was howling. Watkins Glen isn’t so far from Guelph, in miles. The weather was likely to be just as nasty there. The mulberry was probably whipping back and forth, its last dried leaves stuttering in the wind. I put the samples in the lab and drove home.

Two weeks later, against all my better judgment, I flew to Boston to visit Tee. It was one of those sudden reversals that divided me from myself, by demonstrating that one side of me made decisions that seemed to surprise the other side, but actually were source of pleasure, because they showed how complex things really are, how we’re attached to people in ways we just can’t understand.

In the taxi to his Back Bay house, I thought about those aspens in the Rocky Mountains that are all connected by their roots. They are said to form a single immense organism, one individual living being as far as you can see into the azure distances. People are like that. We seem to be separate from one another, but we are secretly and complexly interwoven.

Each of us thinks we’re like that old pine in Watkins Glen, riven into our clutch of soil, proud of our place in the world, but actually we are threaded together in a subterranean network. Alec has gone silent, but he has not stopped speaking to me. It’s just that I can no longer hear him.

Tee wants to think he is a colossal tree, largest in the mountains, overlooking great panoramas of lesser and ordinary trees. Underground, things are different. Uncountable numbers of pale thin filaments, rhizomes, and mycorrhizae reach out from his roots, inching through the soil, connecting him to other trees, bringing him news that his conscious mind assiduously ignores.

Out of sight, the aspen organisms are mats of of fibers, thrown over mountains like caul nets. It’s the same with people. We seem to be disconnected, and even dispersed, but we are tied together. We look like bodies, with legs and arms and faces, but mainly we are networks of pale tendrils, branching, adhering, anastomosing. I am still entangled with Alec even though I no longer see or hear him.

I am also intertwined, through Adela, to people in her family like her sisters Ekaterina and Maschinka, even people who don’t understand a word of English. I am rhizomatically intimate, in ways I don’t really want to picture, with Fina’s unhygienic boyfriends, and even their dubious families, heaven only knows what they are like.

Alec has not disappeared, although it is hard to say what communication I am receiving from him, or perhaps even sending him. He always spoke by remaining silent. He was present by being absent. In response to his silence I have many thoughts, many questions.

I couldn’t tell Tee any of this, at least not in these words, but that day I was once again hoping my presence in Boston, and my dependable preoccupation with our invisible brother, would have some effect on him.

As the taxi got closer to Tee’s house, I felt a familiar pang of discomfort, which I’d first experienced when Tee became so successful. The driver pulled up in front of his brownstone. I paid, got out, and stood looking up the stone steps to the perfect Christmas wreath, hung on the heavy mahogany door, a door that Tee had designed himself, with two scalloped windows glowing with light, like smiling eyes half-closed.

The doorbell chimed, and there he was, looking flushed and fit in rolled-up sleeves and black vest sweater. We held each other tight and thumped each other on the back. Tee called out for a vodka tonic, which he still assumed was my favorite drink, even though I hadn’t drunk vodka tonics anywhere except with Tee for decades now. Someone came and took my coat, someone else put the drink in my hand, and a third person took my suitcase and computer bag. There was Cayla, Tee’s wife from before he’d become so successful, still hanging in there, but perilously, judging from her smile which was too tense to be the public face of an imperviously young wife. Cayla and Tee led me up the gently curving staircase, which Tee had also designed, past the framed pictures of an article about him in Time Magazine. The second floor was full of people, which was no surprise, because a weekend limited to me would let down so many of their close friends and colleagues. We went into a crowded drawing room, where hors d’oeuvres were being served on a grand piano by a man dressed in a loud sports jacket.

— Excuse me, folks, Tee said, and people stopped talking and stood in a circle. This is my older brother Samuel, who’s a brilliant biologist. He works in Guelph, in Canada.

Then he introduced everyone one by one: their name, their company, the miraculous fiscal growth they’d achieved or the bewildering markets they’d mastered or the worldwide loyalty they’d commanded for their innovative products or charity work or government service or banking expertise or cutting-edge software, followed in each case by a brief anecdote about an astonishing adventure they’d had or a coruscating witticism they’d perpetrated or just their latest encounter with an ambassador or a senator or movie star or, in one case, the President of France. I said hello to all of them at once, and then turned to Tee to avoid being asked about what I did, but he had vanished.4

Everyone went back to speaking with whomever they’d been talking to before, so I moved quickly to the side and away, and, pretending I had somewhere to go, pressed my way out of the room and across the landing to the servants’ stairwell, and went down, past pictures of Tee meeting people who weren’t quite famous enough to merit having their pictures hung in the main stairwell.

The staircase came out just beyond the dining room, which was jammed and noisy. I walked around the massive mahogany table, looking for my name on a place card. Cayla caught my eye and motioned me to a place halfway along the other side. My neighbors hadn’t arrived, so I peeked at their cards, but didn’t recognize their names.

The dinner was long and determinedly festive. There were entirely unbelievable self-deprecating set speeches by some of the astonishingly rich, prominent, beautiful, or mysterious guests, which Tee received with equally unbelievable boisterous bursts of gratitude.

Several people proposed flowery emotional thank yous to Cayla and Tee, made nearly, but not quite, endearing by the speakers’ inability to mask their dizzying opinions of themselves. Their son Powell sat next to Cayla, staring with an admirably morose expression at the centerpiece, a carved ice swan brooding in a thicket of broccolini.

Midway through the meal, people called on the man sitting opposite to me to tell his story, and at first he demurred, and then he asked for another drink, and finally he recalled his swim down the final six hundred miles of the Amazon, how he nearly gave up a dozen times, how he was used as a raft by hundreds of night wasps, how his feet developed a resistant fungus, how he got dysentery and was continuously incontinent and dehydrated, how his scalp burned and peeled, how the vaseline that protected him was eaten off every morning by little fish, how some larger fish that he couldn’t see kept taking bites out of his thighs and belly, how poisonous snakes tried to ride on him, how one snake got into his swim trunks and bit him on the scrotum, how that required a special bandage that chafed, how the wound got infected, how the doctors in his support boat kept asking him to give up, but how he persevered, swimming eighteen hours a day and floating the other six, how toward the end he became delirious and once swam into a floating tree, how his mother in Southampton called every night, “begging me, pleading me, asking me to give up,” but how he didn’t, he just couldn’t, that’s just the way he was made, that’s what he kept telling her, and how he hoped that deep down she really understood him and supported his quest, but how he’d never know for sure because she died while he was swimming, and how he decided to go on and finish the swim in her memory, how an orphan girl in Venezuela became his best friend, how she texted him every evening, and his support crew read out the texts, how she wrote things like “Never give up. I am also alone in life, and you always have the stars,” how he cried when he heard that, but his support crew didn’t know because he was wearing goggles pasted on with vaseline, how he’d felt so alone, alone in the world, the only person ever to have done such a thing, alone with his thoughts, alone under the stars, and how National Geographic filmed the entire swim, how they brought two boats and fifteen people, and how he had been written up in the New York Times, and made “adventurer of the year” by the Explorer’s Club, and accepted a medal from the President of Brazil, and how he was going to be featured in Atlantic Monthly and CNN and CNBC and ESPN and the National Geographic Channel, and how they were talking about a TV series, and how his book would be published next month by Penguin USA.

People cooed when they heard that story, and a loud man in a royal blue power suit sitting next to me said that he had never heard such a selfless story, such an amazing account of loneliness and heroism, it reminded him of ancient tales of Hannibal or Livingstone or that boy who walked across the Sahara, and that he hadn’t done anything in his life even remotely like what that swimmer had done, what amazing bravery, probably no one at the table could say they had tested themselves that deeply, or had been so alone, or so close to what makes us all human, our basic mortality, except maybe he himself, because the swimmer’s story reminded him of his own attempt to fly around the world in a high-altitude balloon, an attempt which was also about space and time and feeling your true humble place in the universe, except of course supported by a five point four million dollar pressurized gondola made of the latest microlattice ceramics and pre-market iridium communications technology he’d gotten directly from a military contractor, shh, don’t tell anyone! and a chain of dedicated shortwave operators, many with technicians and engineers who had been personally trained by Bill Halbersam, the world’s foremost high-altitude flight engineer and, he was privileged to be able to say, a personal friend, these engineers and radio operators positioned at strategic points all around the world, including some pretty unusual places such as Tristan da Cunha and the French and Antarctic Territories—Did anyone know those? No, no, they’re not in Antarctica, they’re probably the world’s most isolated islands, five thousand miles west, that’s right, west, of Australia, an amazing place, with no airstrip, no way to get there except by commercial vessel—anyway supported by those shortwave operators and engineers, and with the full cooperation of the Navies and Air Forces of over two dozen countries, including complimentary “check-up” fly-bys by the Danish, Romanian, Hungarian, and Israeli Air Forces, but what does any of that mean when your oxygen fails at twenty thousand feet, and you’re losing consciousness, and your radio does not work, and your uplink fails, probably because of solar storms, and all you can do is pray, you, alone with your maker, alone, twenty thousand feet above the central Asian plains, in the dark except for starlight and the unbelievably beautiful ionospheric auroral light—Had anyone ever seen that? No, it’s not ordinary auroras like you see from Earth. Otherworldly, that is all he could say, it cannot be photographed, it cannot be described, it can only be experienced by a few very lucky people—alone with the ionospheric auroral light pouring in the triple-paned portal, alone, your millions worthless, alone, alone, alone?

The room contemplated his loneliness.

— But I was not alone! he shouted. I heard a faint crackle on the shortwave, and it was a patch from an operator in Kazakhstan, through to Bill, who was right here at MIT! Thank god for Bill, I said, I prayed that, really, and I wept, I’ll admit it. Bill talked me through the darkest half-hour I will ever spend in my life, nothing compared to your days on the Amazon, sir, I am sure, but in my own small way a tremendous, astonishing, life-affirming thirty minutes before I understood that all I had to do was just flick a little red switch, that was my backup generator, and all of a sudden my cockpit lit up like a dozen Christmas trees, and I thanked god that he had allowed me to have such an experience, which ordinary people can basically never have, and also to be wealthy enough to afford the entire gondola, land-based crew, international support, and most especially a backup generator, ha ha ha!

Everyone toasted that, and the table congratulated first the swimmer, then the balloonist, and soon everyone had their own stories to tell, except me and Powell.

When the dinner finally broke up I went back into the drawing room and sat on a sofa by myself. An hour went by in awkward conversations about Tee’s meteoric success, which I tried to balance by talking about myself in modest terms, although that never worked, because in Tee’s circle modesty just meant the speaker was hiding even more amazing accomplishments, and several times I had to fend off hints that perhaps I was being headhunted, or I was on the short list for a major prize, perhaps the Nobel, which wasn’t that crazy an idea, they’d say, because after all we know one laureate, no, actually two laureates, there are a lot of them around aren’t there?

At one in the morning, Cayla asked me if I’d like to call it an evening, and she led me to my room on the top floor, where I fell asleep almost instantly in a miasma of Eider down and potpourri.

The next morning I came down the servant’s staircase and found Tee in the breakfast nook.

— So, he said, You look rested. And tell me, weren’t those fabulous people?

It used to be that Tee had off days and on days. He’d fall into sudden depressions, or get testy with people. Those lapses had been crushed by his thundering successes, and now it often seemed he was speaking into an invisible microphone.

He asked if I’d met Phil Gordon, from Gordon’s, an amazing person, who ran an ultra-successful software company that made securities software for corporate servers.

— Phil is the most totally non-risk-averse person I’ve ever met. And get this, he just financed a start-up in comprehensive systems failure analysis.

This was my last chance to talk to Tee before I left, but he had a firm grip on his microphone.

— I wasn’t introduced to him.

— Comprehensive systems failure analysis, it leverages a new algorithm for determining failure probabilities for integrated business initiatives and, in theory, all sorts of situations in different fields. It’s a blend of decision theory, market analysis, and physics, bringing together quants in behavior, quants in finance, and quants in physics.

It wasn’t even worth trying to sound as if I knew what Tee meant, because Tee knew I didn’t know. He was hinting, in his clumsy Tee way, that for my own good I might consider studying both failure and finance a little more closely. In fact, he would have liked to say, I was such a signal example of failure that it might require an unprecedented combination of highly technical analyses, such as Phil Gordon’s, even to begin to model my unprecedentedly unpromising choices of career, location, and wife, and my apparently inexplicable talent for combining disastrous choices in such a way as to produce and maintain crazy low levels of achievement, recognition, energy, and overall interest. I was, in Tee’s eyes, a stupendous inversion of success, like a mushroom growing down into the earth.

— Amazing, isn’t it, Tee said, and Phil is so modest, so sweet. You’d never suspect he runs a company with nine hundred employees.

I didn’t say anything, so Tee was obliged to fill in the blank.

— Compared to us, of course, Phil’s company is a start-up, but then again this is all so new I feel like we’re a startup too.

His royal “we” wasn’t royal at all, but corporate. He had become a conglomerate entity, a distributed cloud of power. It wasn’t enough to have one world-class adventurer at your party, you had to have two. The balloonist had probably been invited as insurance in case the swimmer went on too long about crotch bandages.

I wondered if Tee remembered there was another “we” back behind that one, the old “we” of the three brothers back home. It was time to wade in.

I asked if he’d heard from Alec.

He asked if I had, and the look on his face showed he knew he was about to pay the penalty for inviting me: he’d have to talk a while about our family.

I told him I had a notion that Karen screened his emails and letters, and never showed them to him.

— She wouldn’t do that, he said, but he didn’t say how he knew. But, he added, you know there was always that distance between him and us.

That was the old “us,” which he had used without quite meaning to, and I thought, what a state I must be in to like that so much. I told him I’d been thinking of Alec, that I felt he was thinking of us.

Tee didn’t answer. I was losing his attention. In a moment he’d think of an excuse to go.

— We’re a small family now, I added. We were three brothers, and now we’re really two.

He smirked, as if to say, And that’s my fault?

I’d gone too far. I’d forced him to acknowledge that something close to him, genetically if not emotionally, was broken, and he hadn’t fixed it. I felt the doors beginning to close, like a great mansion being shuttered for a storm. If I pushed, if I told him I’d also been thinking about our mother, I’d get one of his potted responses. Oh yes, he’d say, poor woman. We took good care of her. You shouldn’t feel bad about it. She was troubled, but she was our mother. Tee’s memory of our mother was like a well-tended grave. On the day of the burial the ground looks raw, but then it’s planted with roll-out grass, and in a week the ground’s wound has healed. After that all you need to do is make sure the plot is ornamented with a tasteful arrangement of natural flowers, regularly renewed and varied according to season, complementing a clean healthy bed of grass, the stone proudly standing under an optimistic sky.

— Well, he said, looking a his phone, looks like it’s going to be a busy day.

The doors of the mansion were bolted. The windows were boarded up. It was time to go. My flight wasn’t until the evening, but I pretended to be surprised at the hour and said I had to run.

— Too bad, he said. Next time you should stay longer. Stay the weekend, and we’ll go to our place in Westhampton, or we’ll drive to Provincetown, or just stay here and relax, or you can visit your colleagues in the universities.

For a moment I thought of fighting back, saying, What colleagues? But the hurricane winds were too strong.

Cayla and Powell were like planets in tight orbit around a fierce sun. The staff, the caterers, his hangers-on, were like swarms of asteroids, wheeling around, trying to keep up. They were fascinated by the Tee sun. Even though it burned them they couldn’t resist.

I was like one of those odd objects beyond Pluto, something that could have been a planet but wobbled too much, or was too small, or for some reason proved incapable of following a simple elliptical path. Maybe, I thought, like one of those wayward comets Martha had studied.

I went downstairs with my suitcase. Tee had already left. Cayla said Tee was sorry, something had come up, and they both hoped I’d be back for Christmas or New Year’s. She called me a car, and we sat down together in the vestibule to wait.

I had never found a good way to talk to Cayla. She looked at me solicitously. I told her it had been good to see Tee, but, I said, to be honest, I thought a part of him had gone missing.

— I’m sorry you feel that way, she said. He said he’s missed you. I hope you can stay longer next time. Your car is a minute away.

I could imagine how Tee would react when Cayla told him what I’d said. He’d give her one of his earnest looks, the kind doctors use to signify they care even though they’re actually thinking about everything in their lives except you, and he’d say, Poor Samuel, he was such a happy child.

As soon as I’d gotten in the taxi and waved good-bye, I told the driver to take me to the Arnold Arboretum. I had the idea of spending the day there, just wandering around, not talking to anyone.

The leaves had been raked away and the grass was mottled with winter blight. The park was mainly deserted. I wandered there for an hour or so, roller bag in tow, under clearing skies.

Then I went and found a pizza outlet, where I sat in a linoleum booth eating a family-size pepperoni and spinach pizza and reading an essay called “Scraping Slow Sand Filters To Remove Giardia and Cryptosporidium,” by someone named D. G. M. Wood-Gush. I decided that if someone can be named D. G. M. Wood-Gush, and someone can swim the Amazon with an infected scrotum, and if someone can have a wife and lose track of her, then a person can have a brother, and drift away from him. My mind was a bit of a wreck after the visit, and yet in that muddle several things aligned.

That pizza parlor was the moment I decided not to follow Tee’s life anymore. I called Adela. It was just before midnight her time, but I had to tell her. First I described how much Tee had boasted, and Adela said that was awful. She said she had to be honest, she’d never liked Tee, he was too American for her. Then I told her I’d lied about when my plane left so I could get out of the house.

— Oh, that was your most excellent idea, she said, in her nearly perfect and somehow unintentionally eloquent English. You are best living in the time you prefer.

— So I have made up my mind not to visit Tee again.

I didn’t know what to expect from that, because there was no room for explosive ideas in the sorts of conversations Adela and I had, especially not ideas so treacherously close to the facts of our own relationship.

Oh, dear, she said. Then she told me about her mother’s neighbor Esther in Bratislava.5

— Esther loved her son Karol more than anything in the world, she said. But Karol fell in love with a grasping woman. Karol’s wife only let Karol see his mother for a couple of hours every Sunday. Karol had two daughters with this horrible woman, and Esther loved them also even more than her own life, but Karol’s wife hated her mother-in-law.

— Why? I asked, chewing quietly so she wouldn’t hear.

— For no reason other than she was sheer ignorant. This woman, Karol’s wife, she would not let mama’s friend Esther see her own grandchildren more than a couple of hours every other Sunday and holidays. Eventually this grasping horrible woman bullied her husband Karol into moving away with her. They went to Arkansas!

— This woman is American?

— She went to a nursing school. Esther came to mama in floods of tears. Karol, her very own son, he had just come to her to say goodbye maybe for forever. He even returned a big wooden bowl Esther had packed with a dinner for his little girls. It was unopened because his horrible wife wouldn’t let her daughters eat anything Esther made.

— He should have just kept it, I said.

— He had no choice. He was was bullied by his awful ignorant wife. Esther told mama she held onto Karol and said, “Just don’t go!” But Karol said, “My wife told me my daughters are going with her to Arkansas, and I can come along or I can stay. I have to go.” Esther told mama she pleaded with him, she begged him. But Karol said, “Sorry mother,” and he turned around and left her, I guess for forever, because Esther is not invited to Arkansas, and besides, Esther is not young, she cannot travel easily anyway. This story is so sad!

— I remember Esther and Karol, I said. I met them on the last visit to Bratislava. Maybe she tried too much to keep control.

— She only wanted to keep her son near to her.

I told her how one time Karol came in from the TV room to get a snack. Esther jumped up, and asked him a stream of questions in Slovak. Maschinka translated. Esther had asked Karol if she could get him anything, a drink, a glass of water, a sandwich, some soup, an open-face ham and cheese baguette, with some mayonnaise, without mayonnaise, with mustard, a touch of mustard, no mustard, with tomato, without, did he want chips with it, did he want an apple tart, did he want some grapes, maybe just some grapes?

— Maybe, I said, the poor kid was suffocated.

— She loved him. She is heartbroken.

We talked another minute, and then she said goodbye, promising to call soon. I was grateful she’d told the story, and I thanked her for it. We both knew she wasn’t upset only about her mother’s friend Esther. When you feel strongly you may not know why, at least not right away. That’s how Adela and I are. She listens, but she is a half-step out of alignment with all my thoughts. She has her own stories, her own words, and they are never quite mine.6

It was what they call a fateful day. I wouldn’t go see Tee or Alec ever again. Tee would notice, but he wouldn’t do anything about it. Phone calls seemed to be enough for him anyway.7

Alec was okay. I knew that rhizomatically, without even calling.

If my mother was still alive, and I told her what I’d done, she would consider my position and conclude it was reasonable. If I told her that the same logic suggested I should also avoid visiting her, she would get that serious look she sometimes got when a calculation took an unexpected turn, and then she’d say, “You are correct,” and go back to her mushroom manuals. I can picture the exact way she would sit at her desk: as if no one was there, jaw working, eyes pinned to a troublesome mushroom.

— What are you? she’d ask. What are you?

**<Chapter 13 Some Kittens in the Philippines>**

Viperine and Vipesh stood together in front of the screen.

— You will be interested in the subject of our presentation today, Viperine said. It is the discovery of the amoeba that causes dysentery.

She was dressed in a short-sleeved black shirt with a Chinese collar, gray jeans and rose-colored ballet slippers. Her hai

r was pinned back and she was wearing pearl earrings.

Vipesh’s eager eyes were fixed on me.

My eyes may not have been fixed on him, because I had a slight but definite headache, a pinprick of pain not quite hidden inside a general cloudy discomfort.

— Thank you everyone, he began, in such a loud voice that Courtney winced.

— And thank you, Doctor Emmer, for permitting myself and my new friend Viperine Pistouriec to present our joint research. As Professor Doctor Emmer has helpfully informed us in previous days, Entamoeba is a genus of amoebae that live inside other animals. Entamoeba histolytica is one of the two endemic intestinal amoebae in us, Homo sapiens.

He pronounced our genus and species names as if they were insults. He was apparently trying for a comic effect.

— My first slide shows this humble organism.

The sun-washed screen revealed a faint apparition of a mass of presumably amoebic material.

Courtney pulled the blind cords and the screen grew darker. It was a dysentery amoeba, spilling onto the screen like diarrhea.

It wasn’t a full-on headache yet, but it was settled on my right temple, just where the bone is thinnest.

— Histolytica can live in its full, trophozoitic form inside of us, Vipesh continued. However the amoeba can encyst itself anytime it wants. When it is a cyst it can survive outside of us, in so many places, also in very high places, and also in cold temperatures. Viperine and I have now discovered that the name histolytica means destroyer of tissue. This amoeba causes quote, pain, exhaustion, liver abscesses, explosive bloody diarrhea, and fulminating dysentery, unquote. Fulminating means quote, aggressive and life-threatening, unquote. Very bad dysentery!

— Lovely, Courtney whispered.

He rotated his notes to read something he’d written sideways in the margin.

— In some cases this amoeba it may also causes a condition known as ameboma or amoebic granuloma. This is a granular mass that can cause quote ulcerated, bleeding lesions of the intestine. Unquote.

The next slide showed a man at work on a mass of—of what, exactly?

— According to my own research, the first person to prove that the histolytica amoeba causes dysentery was Doctor Moritz Goehr. Doctor Moritz Goehr is also Doctor Moritz “Metrobius” Goehr, I do not know why. This is Doctor Metrobius, working on something. English is not my first language, so I may be incorrect in this result, but if I am wrong I am hoping very much Doctor Emmer will correct me. In 1875, Doctor Metrobius did an experiment where he took human feces from dysentery patients, yeah, I know, how did he do that, but anyway he did, and then he added pure water, and then he injected this mixture into a dog. The dog got dysentery and died.

Vipesh reminded me of a ratchet wrench, the kind you crank back and forth. Each sentence he spoke tightened an imaginary bolt down against the hard plate of my skull.

— What is he cutting? Blake asked.

— I believe it is a rectum.

Blake grinned, and Vipesh grinned back. It was biology lab, no penalty for saying rectum.

Courtney looked as me as if to say, “Is this necessary?”

— Here is another picture of the amoeba, Vipesh continued. It is very runny! Now I will read you how to find amoebae in your own feces. You have to dilute your feces. You mix them with a pH-balanced saline solution, we have it right here in the lab! You have to excrete your feces in the unisex bathroom down the hall, and that is because you have to mix your feces right after you excrete them, and that is because then the amoebae are quote relaxed unquote. If it is cold in the unisex bathroom, you need to heat a bowl first, and then you excrete into the bowl, oh, sorry, I forgot, you have to heat up the pH-balanced saline solution to body temperature, okay, and then you excrete into the bowl. The heated bowl. You take the pieces of your feces, that sounds funny, the pieces of your feces, you mix them together with the warmed-up pH-balanced saline solution. That is so the amoebae stay quote relaxed unquote, it means they do not feel chemical distress, that would cause them to encyst themselves. In that case then they would be hard to find. Then you let the bowl sit three hours in a warm place. I used my stove top. Here you can put them under the incubator lamps. Then you take a pipette, I used a straw…

— Thank you, Vipesh, I said.

— Then you take a pipette, I used a straw…

— Thank you.

— Okay, sorry, and here is another picture of this amoeba. So Doctor “Buchonius” Moritz went to the hospital where he worked and asked people to do their diarrhea into special pans. He took samples out of the pans. Then he poured boiling water into the pans. Then he poured it out. Then other people did their diarrhea into the pans. Then…

— Thank you. Just go on with the history.

— Of course, Doctor Emmer. Thank you.

My headache took advantage of that moment to declare itself. It felt like an ⅛th inch expansion bolt was being turned slowly into place on my right temple. Steel pins were being forced in around the base of the bolt. As Vipesh talked, I could feel the pins being tamped down by little steel hammers, prying apart the sphenoid and parietal bones, turning my cranial sutures into miniature crevasses.

— Well, he continued, at the time when Doctor Goehr lived there was a great disagreement. People argued were these amoebae the main cause for dysentery? Three doctors, Doctor Hlava, Doctor Massiutin, and Doctor Pfeiffer, I am sorry I do not know their first names, I believe that back then Western doctors preferred the exclusive use of their family names only, these three doctors, they took human feces containing amoebae and mixed the feces with warm pH balanced saline solution and they injected the solution with the feces into the rectums of dogs and cats.

— Some cats and dogs got infected from the injections and swelled up and died.

Courtney stared at Vipesh with a fierce expression.

— Other cats and dogs survived okay, but then they got dysentery. Later Doctor Musser, Doctor Stengl, and Doctor Dock, right, I know, Doctor Dock, ha ha, they also mixed human feces containing amoebae with warm pH-balanced saline solution and they also injected that into the recta of cats and dogs and then the ones that lived, the doctors collected their cat and dog feces, and they found amoebae in their feces.

— Do we need to know this? Courtney asked.

— Wait, Blake said, let me guess. Then they mix the dog and cat feces with pH-balance water and inject into people!

— Actually no, Blake, but thank you for your guess. Also, these doctors had problems deciding is dysentery always caused by amoebae? Because in tropical places like the Philippines, people have diarrhea both in the day and also in the night. And also in India. These doctors tested all the feces they could, and every feces had amoebae. And still no one came to them and complained, “Hey, please, I am suffering.”

Vipesh’s next slide showed a serious-looking man in a business suit. He looked tired.

— This is a photograph of Doctor Schaudinn. He is famous for a paper he wrote in 1909. It says the human body has two kinds of amoebae, one of them is harmless and the other, it causes dysentery. Now the commensal one is known as Entamoeba coli. This is not the same as the Escherichia coli that is the most friendly of all intestinal creatures, it is a very friendly name to doctors, we know it as E. coli, like I can be known as P. Vipesh. When I first began my study, I thought E. coli was a name, like Ed Coli. Then I was surprised that his family name is funny, Escherichia. After that I think he did not seem as friendly. But I also know that if people do not know about Thailand, they will say my family name is also not friendly, or they may say that, I do not know. But it is still a friendly bacterium. And Entamoeba coli is also very friendly. It is like two people with almost the same name, they are easy to be confused. But the amoebas are in the same family, the name is also E., but Entamoebidae, like I am P. Vipesh, but my bigger family is Thailand, so if I am an amoeba I am Thailand P. Vipesh. I am sure there is someone else named Thailand X. Vipesh, or Thailand N. Vipesh, maybe one is friendly, like I am, and another is also friendly, or maybe not, and the friendly one has a friendly short name, E. coli, but the dangerous one has only a full name, that is Entamoeba histolytica, we do not know this one as E. histolytica. But I have heard Doctor Emmer say histolytica, that is like calling me Vipesh without the P., it is okay. We call it this way even though it is not friendly, I do not know why.

— Vipesh, that’s not…

— Oh, excuse me, Doctor Emmer, I was attempting to levitate the conversation. So now we go back to our story. Doctor Schaudinn experimented on himself. He made preparations of water mixed with one kind of amoeba from somebody’s feces, and he drank that. Yeah, I know. Then Doctor Schaudinn made a preparation from drinking water mixed with the other kind of feces, sorry I mean the other kind of amoebae, from someone else’s feces. I believe Doctor Schaudinn was noble and self-sacrificing. He was attempting to prove his theory of the two amoebae. He drank his amoeba and feces water between 1907 and 1910, that is three years, or maybe four years if you count 1907 and 1910 instead of just 1910 or maybe just 1907. He does not say how often he drank his amoeba and feces water. But he drank it and he drank it. He kept drinking the water even after 1909, that is when his famous paper was published, so maybe he was not completely sure which water was making him sick. He got dysentery seven times, and he died from an abscess of the duodenum, which is part of the intestine below the stomach.

— Vipesh, do you know if he was sick for a long time? Blake asked. He looks sick in that photo.

— I do not know, I am very sorry.

— What did the water taste like? I mean, did he put any flavoring in it? Maybe some whiskey?

Courtney stared at me and mouthed the words, What gives?

— I think the amoeba and feces water must taste very bad, Blake, remember it was warm. Doctor Schaudinn wrote that he only drank a little at first, that is natural, personally I could only drink a very small amount, and I could chew some bubblegum right afterward. It would be good to get the taste out of my mouth, because otherwise I am sure I throw up. But he wrote that the small amount was not enough. He started drinking 200 milliliters of amoeba and feces water.

— A glass full!

— He does not say about the flavor. I do not think they had bubblegum back then. Maybe he got used to it.

— He probably had bad breath.

On came a dark picture of a field.

— After Doctor Schaudinn’s experiments, in many years the U.S. Army built Feces Incinerator buildings. That was to minimize the risk of dysentery. This shows a U.S. Army base number 64 in Mars, France, that is strange, right? Mars, in France. This photograph is 1918. This is the end of the First World War. This camp had a Feces Incinerator building. According to my research it is the building on the left with the blocked-up windows.

Blake squinted his eyes to get a better view.

— Why is that picture so dark?

— It is a very old photograph, and I believe cameras were not very good back then.

— Within these Feces Incinerator buildings there were ovens known as Feces Destructors. The black metal machine in this next photograph is a Feces Destructor, inside the Feces Incinerator building in the U.S. Army base number 64 in Mars, France, in the year 1918. All the feces from the U.S. soldiers in this base were transported here and they burned them in this oven. Later Doctor Schaudinn realized many soldiers who had to bring the feces became ill and some died. It figures, right?

— That would totally suck.

— The soldiers had their orders, they were ordered to bring buckets to the soldier toilets, tell the soldiers put their feces inside the buckets, then bring the buckets of soldier waste to the Feces Incinerator building, then pour the buckets into the metal Feces Destructor, then fire up the Feces Destructor, make sure it is hot enough to boil soldier feces, then burn the feces until they are ash, then clean up the ash, then wash the buckets until they shine, I do not know where they washed them, I hope not in their garden, then do not rest, go immediately back and see if more soldier feces are ready, and put them in buckets and begin again.

Next came a photo of a tentative-looking man, with pale skin and a flaccid smile. His right eye seemed to be larger than his left.

— The hero of my story today is Doctor Charles Franklin Craig, he wrote a classic book, the title is The Parasitic Amoebae of Man. He gives his full name in the book, all three names. Some people have three names. I do not, I only have two. I imagine Doctor Emmer has three names but I believe he does not wish us to know the third name. Doctor Charles Franklin Craig was a U.S. Army doctor, but I guess he did not have to wear an Army uniform because here he is. He worked in the Philippines on an Army base there, I do not know which one. He injected five cc’s of infected feces mixed with warm water into the rectum of kittens. Then he watched carefully because he wanted to see what happened.

Blake was spellbound. Courtney had on her please-kill-me-now face. Other students were on their phones. Rebecca or Maureen looked like she was about to gag. Her lower jaw was pulled in and her mouth was slightly open. Viperine was looking out the window with a dreamy expression. She seemed to be modeling for a fashion shoot.

— There is a hair in your slide, Blake said.

— One kitten died, and in the autopsy report Doctor Charles Franklin Craig says the kitten was emaciated from diarrhea and vomiting, and its abdomen was quote pumped up with gas. The mucous membrane of its anus was swollen and a quote, considerable amount, unquote, of blood-stained mucus was stuck to it. The kitten’s heart was filled with red clots, and its muscles were quote, dry and atrophied, unquote. Doctor Charles Franklin Craig injected a lot of kitten rectums with different amoebae. Is it correct to say recta? Anyway, Doctor Charles Franklin Craig reports that he did not want to inject kitten recta with fecal water, but he had to, because when he mixed fecal water with milk the kittens would not drink it, and when he force-fed the kittens with feces water they gagged. He does not say how you force-feed kittens, but I can think of a way. Later he developed a method where he starved the kittens for twenty-four hours, and then gave them milk mixed with five cc’s of feces. He says that if the kittens were hungry enough they drank the milk, but if they had been fed before he gave them their feces milk they rejected the milk. So for that reason he was forced to inject the kittens in their recta.

— Vipesh, there is a big hair on his face.

— It’s funny, isn’t it?

I considered the thin-skinned man onscreen and tried to picture him in his lab in the Philippines, poisoning kittens. The doctor, his lopsided eye bulging slightly, stared impassively back at me, as if to say, “Don’t you judge me, Emmer. I worked hard to save lives. I am a serious, dedicated doctor. What have you done?”

I pinched my lips in imaginary rejoinder to my rival.

Vipesh put on another amoeba slide.

— Doctor Charles Franklin Craig reports that the kittens who were injected with feces water that contained histolytica amoebae lost weight very quickly. They appeared to be very distressed when they pooped, or actually he says quote, when they voided their feces, unquote. Their feces at that stage were blood-stained and also quote, mottled with mucus, unquote. Oh, sorry, I already read that. Oh, sorry, I didn’t. He said the mucous membrane of the kitten anus was swollen and a quote, considerable amount, unquote, of blood-stained mucus was stuck to it. So, okay. When he examined the mucusey kitten feces under the microscope, he found they had quote, multitudes of motile histolytica amoebae, unquote. Eventually the kittens died from dehydration and evxhaustion.

Courtney closed her eyes.

My headache had begun making a pinging noise, drowning out some of what Vipesh was saying. The pinging was on my temple, but also inside my head. It reverberated in my cranium, bouncing off the inside surfaces in standing waves, producing tinny echoes behind by ears. It would have been difficult to listen to Vipesh on an ordinary day, but the headache turned everything he said into a mixture of clanging and scratching sounds. His louder words crashed like a toilet lid that’s accidentally dropped down, and his quieter words tinkled like the squeaky sounds that leak from people’s earbuds.

— Doctor Craig wrote that his early results were inconclusive because the feces water contained mixtures of amoebae. He tried his best to collect feces from soldiers who had very bad fulminating dysentery, but their feces also had other amoebae in them. Therefore his results were inconclusive.

Doctor Craig decided to produce pure strains of histolytica and E. coli, and also Entamoeba gingivalis, that one is found in the mouth, and E. moshkovskii, I do not know about that one, sorry. He made pure strains, and he raised the baby amoebae in water diluted with boiled beef stock, I think they probably like beef stock, although I am not sure why, but then so they tasted good, and the kittens eagerly drank the baby amoeba water. In that way Doctor Craig was able to continue his experiments. He made a quote, “kitten farm” and he watched all the kittens very closely.

— After quote, much trial and error, unquote, although I do not understand why he made errors, and not just trials, but finally he concluded it is definitely the histolytica amoeba that causes dysentery, and ever since then, this species has been identified as the one that causes dysentery. Doctor Charles Franklin Craig made many more experiments, but they are all lost because there was a typhoon in some year, I do not know the year, and the U.S. Army base was flooded, and all his papers were turned into toilet paper, ha ha! And the toilets overflowed too, but that does not matter. He does not say what happened to the kittens. Today Doctor Craig is a forgotten hero of the history of dysentery, and his kittens are all forgotten heroes too, I think especially the ones who died from dehydration and exhaustion, but also the ones that drowned, and maybe they all died.

He smiled at me as if he had killed the kittens himself.

— And this is not the end! After histolytica was identified, people began to realize that it lives in many people, not just in trace numbers, but in quote, infestational, unquote, numbers.

— There is a study by Doctor L. Whitmore in the 1918 issue of the Pennsylvania Medical Journal where he talks about testing U.S. Army soldiers in Texas. This is Doctor L. Whitmore. I do not know Doctor L. Whitmore’s first name, only the letter L, I am sorry. He tested thousands of feces excreted by U.S. Army soldiers in Texas. He looked for histolytica and also for worm eggs and also typhoid bacteria. I think he went to the U.S. Army soldiers in Texas and took all their feces. He also took feces from the soldiers who prepared food, because you know how it always says in restaurants, workers must wash hands. Everybody knows they do not wash their hands. Bits of feces get into your food, you all know that. So Dr. Whitmore tested quote, food handlers, cooks, waiters, and water wagon drivers, unquote, and they found that their quote, stools, unquote, ha ha, it is a funny word, their stools were eighty percent infected overall. He wrote that in a quote, normal, unquote, U.S. Army places, one in ten people have quote, massive indigenous populations, unquote, no, still quote, of histolytica, unquote. And he also wrote that in the quote, civilian population, unquote, that means us, a, quote, equivalently high percentage of subjects will undoubtedly display the same endemic high populations of histolytica, unquote. He writes in a fancy way but he means the amoeba is everywhere and there are many of them in everyone.

— Not in me, Blake said.

Courtney was staring at me again, in a slightly skewed way, as if she was looking at the spot next to my eye socket where a lobotomy spoon might be inserted.

— You too, Blake. I believe from his picture Doctor L. Whitmore was a very thoughtful person. He imagined that dysentery could be spread by flies, so he tested fly feces. He fed flies on fresh quote, stools, unquote, that is human feces stools, fresh ones, not diluted with warm pH-balanced water, and he found the flies quote, passed their stools, unquote, that is fly feces stools, less than five minutes later. He collected the fly feces and tested them and found that there were histolytica trophozoites and cysts in their stools, quote, already, unquote, after only five minutes.

The place on my forehead where Courtney was looking began to tingle, like it probably does in the first stages of the Chinese water torture. Now my head hurt in four places: there, at both my temples, and in back of my head, where it felt like a car jack was being wedged into the space between the base of my skull and the top of my spine.

— Vipesh, what are you talking about? Courtney demanded.

— See this Courtney?

A slide of a fly.

— When I read about fly stools I wondered what fly stool feces look like, because I have never seen a fly make a stool feces. In fact their poop is, quote, sticky black globs, unquote. Flies walk and excrete these little poops one after another. They look like a dotted line showing where the fly has walked. Right?

— Back to the history?

— Sorry, Doctor Emmer. I was only attempting to achieve the best understanding in my research material. I discovered also the research of Dr. Cao, in 1917 he counted the bacteria in flies in Shanghai. He found 3,594,400 bacteria inside a fly from the, quote, filthiest quarter of Shanghai, unquote, and 1,901,700 bacteria inside a fly from the, quote, cleanest quarter, unquote. How did he do that I wonder? I believe he was a very patient man. Possibly he was also a genius. I wonder did he lose count. He must have lost count. But so, back to my history. Doctor L. Whitmore and his team found histolytica amoebae in the fly stools. He therefore concluded three recommendations. I would like to read them to you. And I will. But first here is my last slide. It shows what happens when a dysentery amoeba has dysentery!

— Ha ha, that is a biology joke. I do not believe dysentery amoebae can have dysentery, because their poop is already liquid. It would be impossible to know if they had diarrhea, right?

He paused, waiting for me to correct him.

— You are the best, Vipesh, Blake said.

— Doctor L. Whitmore’s first recommendation: quote, improve methods of disposing of fecal matter. Do not distribute fecal matter indiscriminately over the surface of the ground, unquote. Like who does that anyway? Two. Quote, be careful not to bring soil into barracks and tents, so fecal matter does not spread to bedsheets and pillows and from pillows into people’s mouths, unquote. I believe when Doctor L. Whitmore lived, people relieved themselves all over the place. Three. Quote, do not smash flies, because that splatters soil into the air, unquote. I love that one.

— Soil means feces, I said.

— Thank you for the correction. I do not fully understand that, but I will study it. And now I would like to conclude by quoting the moral of Doctor L. Whitmore. I think it is very poetic. I believe Doctor L. Whitmore was one of the giants of science. Quote. There is no part of God’s footstool but what men may pollute to so great an extent with infected feces that it may become a graveyard. Unquote. Thank you very much.

He looked at me.

— I do not know what a footstool is, but it may also be feces.

— It’s just a stool.

— I do not know why God needs a stool, I believe possibly this is God’s own toilet.

Blake stood up and clapped.

— Vipesh! Vipesh! That was great!

— That was gross, Vipesh, Courtney said. You totally ruined my lunch, my dinner, and my breakfast tomorrow. Thanks.

— You are welcome, Courtney.

— I like kittens, Maureen or Rebecca said. We hated that presentation.

— I am sorry, Maureen, but I am also glad you like kittens, and I ask you please to remember the dead hero kittens, they helped solve the mystery. They were not injected into their rectums. They drank amoeba water with milk and also with beef and they were very happy until they swelled up.

— Vipesh, Blake said, I have a question. How did Doctor Craig inject the kittens? I mean, like, did he use a needle? Why not inject the kitten’s arm?

— That is an excellent question, Blake. I can tell you it was not a metal needle, but a glass pipette. He gave the kittens an enema.

— Cool.

They nodded to one another in agreement.

— Like when I made my test, I used a straw to…

— Thank you Vipesh, I said, that was a very good presentation.

He bowed with his eyes closed.

— Kittens don’t have arms, Courtney said.

Viperine switched off the projector and stood in front of the darkened screen.

— Thank you, Veeps. For my part of the presentation, she said quietly, I would like to correct some things Vipesh has said. Afterward I will propose a new theory.

Vipesh collected his papers and sat down.

— First my correction. It concerns the veracity of these experiments you have described so vividly. They were all made in the first decade of the twentieth century. I wonder if they could possibly still be considered accurate.

— I believe they are, to the best of my research.

— Histolytica does cause dysentery, and it is still recognized as a species, yes. But it is now known that a half-dozen different species of amoebae interact with the human body in such a way as to produce dysentery-like symptoms, and indeed dysentery is no longer considered a single illness. The set of symptoms known as “dysentery” is caused by histolytica and other amoebae, in combination with bacterial agents. Even Charles Craig, late in his career, recognized that the symptom complex of dysentery is often the end result of infections caused by the amoeba histolytica, and not the direct result of the amoeba. In addition, Craig’s experiments were, to say the least of it, uncontrolled, so they cannot be counted as legitimate discoveries.

— But Vipes, you told me…

— My turn, Veeps. The other authority you cite, L. Whitmore, is such a minor figure that I was compelled to go to the storage annex to find his papers. His full name is Lawrence Whitmore, and he served as a United States Army physician during the First World War, with no deployment abroad. He had an undistinguished career, mostly at the Pennsylvania State University in rural College Park, Pennsylvania, where he served as one of the staff doctors in the local university hospital. The publication you cite, from the Pennsylvania Medical Journal, appears to be one of only three papers he published in the course of his long employment. The other two were on neonatal care units called Babylators, which the university was testing in the late 1930s. So he can hardly be considered an authority on histolytica, or on hygiene, or on anything else, and he is hardly a good representative of the new regimes of hygiene that were gradually instituted after Craig’s experiments. In fact he is so minor that I became curious to see how you had found him, but that mystery was solved for me when I discovered that if you go to WorldCat, which is the most common online database, the one used by every undergraduate, and type in “histolytica diarrhea,” you get that paper as the first result.

— Viperine, I said, I thought you were presenting a joint paper with Vipesh.

— We did indeed begin by collaborating, but our paths diverged, and yet we remain very closely collegial.

She spoke at about the same volume as a purring kitten.

— We do, Vipes, and thank you again for the very useful corrections.

— For these reasons and others that I do not wish to go into here, I personally reject Vipesh’s paper as inadequately researched, although he managed to convey the simple, if outdated, notion that histolytica is a vector of dysentery. The actual biogenesis of the complex of conditions known inaccurately as dysentery can involve at least five amoebae in addition to histolytica, and they act together with at least fifteen differentiable strains of gram-positive bacteria. None of that could have been tested by injecting soldiers’ excrement into kittens. Now I would like to propose my own theory, and luckily I can take as my starting point something that Lawrence Whitmore asserts in the paper that Vipesh quoted, namely “that one in ten people has a massive indigenous population of histolytica.” Vipesh misquoted this. Whitmore only says “at least one in ten people in the camp may be assumed to have significant populations of histolytica.” Whitmore was hardly the first to notice the wide spread of histolytica, despite his attempt to claim it as his discovery, and as a statistic it is wrong anyway, even without Vipesh’s exaggerated insertion of the word “massive,” as in “massive indigenous population of histolytica.” Still, Whitmore’s observation can be taken as evidence of a dawning awareness, at the end of the second decade of the twentieth century, that the relation between humans and Entamoeba histolytica is more complex than was first assumed.

— May I just say?

— Yes, Veeps, please go ahead.

— Thank you, Vipes, for showing my error. You are absolutely right, my research is incomplete. I hope to improve on it rapidly, and I am grateful to you for correcting me so very well.

— You are welcome, Veeps. Now I would like to quote a passage from the April 28, 1928 issue of the Journal of the American Medical Association, in which Charles Craig first reported that dysentery is best understood as the name of a “symptom complex.” I quote: “In 1921, I called attention to the infrequency of clinical symptoms in carriers of histolytica. Since then, this subject has attracted widespread attention and there have been published several papers confirming my observations and calling attention to the practical importance of recognizing the mild infections associated with this very important parasite of man, notably those of Kofoid, Castex and Greenway, Trabaud and Mühlens.” Please note, Veeps, that it is entirely common in scientific works of the nineteenth and early twentieth centuries to abbreviate or omit scholars’ first names, and it does not require apologies. It is in fact easy to determine first names. It requires only a look at the standard medical indices, such as Poor’s or PubMed. It might also please you to know that in German, Scandinavian, and English usage, the first initial is the preferred form of reference and completing it is not only unnecessary but gauche. In future I would caution you not to expose your naïveté by apologizing for not knowing full names, because it is unprofessional.

— Thank you, Vipes, this is excellent advice.

He glanced quickly at me, and I could see him calculating how to let me know that he forgives me for not telling him how to refer to given names, seeing as how it is my duty as the instructor to help students, especially dedicated ones, and most especially sensitive ones, so they will not be in the position of being corrected by their fellow students.

— You are welcome. The “parasite,” as Craig calls the amoeba, lives endemically in all of us. A significant percentage of people harbor large amoeboid loads, loosely referred to as “infestations.” Still we may not notice any symptoms. Craig says the “parasite” lives in various tissues and causes lesions in the intestines that the body continuously heals. Notice this: we are continuously slightly ill.

Her voice trembled but didn’t get any louder. She seemed to be getting worked up. She spoke rapidly. It was like the way people talk when they have intense intimate conversations in quiet restaurants.

— It is only when we have lowered resistance that those lesions proliferate and symptoms appear. Craig, who was a legitimate pioneer despite his awkwardly performed experiments, also realized that, and I quote him once more: “the reason that intestinal lesions become a serious matter is that they allow bacteria into the intestinal tissues, and these bacteria then bring with them toxins, creating…”

She stopped and looked directly at me, so oddly that Maureen looked back and forth between us.

— …“complex additional infections.”1

She consulted at her notes and continued in her breathy small voice.

— We are very far from the simpleminded idea that amoebas look goopy so they give us goopy diarrhea, and the topic is considerably more intricate than Vipesh proposes. Amoeba plus bacteria plus chemical vectors plus toxins: they collaborate…

— They don’t “collaborate,” I said.

— …and we collaborate by not noticing we are all continuously slightly ill.

She looked at me as if I were a mouthful of salt.

— It is well known in neuroparasitology that many parasites control the behavior of insects. It is widely acknowledged that it is highly unlikely that humans are exempt from some degree of parasitic behavioral and mind control. The exact chemical vectors that manage the host’s behavior are unknown. However it is widely known that apparently simple parasite life cycles actually include not only other parasites but also chemicals repurposed from the host. So, given all that, it would be preposterous and obstructionist to claim that each parasite needs to be studied in isolation. This is true even among amoebas. For example Acanthamoeba keratitis. It infects people’s corneas, sometimes requiring the removal of the entire eye. But what does it do when we do not notice it? It is associated with many symptoms, including diarrhea. And what is it doing in the intestines, where it typically appears in samples? Or consider Endolimax nana. It has been linked to rheumatoid arthritis. Apparently some people with arthritis have joints swollen with these amoebae, but it is probably endemic in many tissues.

— It’s hard to observe, I said. It’s named nana because it’s so small.

She regarded me with a certain coldness, resting an elbow on one hand, her chin on her fist. A beautiful gesture, I thought: aggressive, thoughtful, and disdainful all at once. It also made her look, once again, like a boy in drag.

— “Nana” does not mean small, she said. That would be “nano.” The word “nana” is Latin for female dwarf.

She was shifting back and forth between strangely placid and unaccountably angry. Like one of those illusionistic postcards where the picture moves when you tilt it in your hand. Between loud attractive boy and unnerving angry girl.

— Doctor Emmer has been corrected! Blake shouted.

— May I continue? When I looked into the recent literature on histolytica, I found some curious information. As Craig noted, when histolytica reach “infestation” numbers, they weaken the linings of the intestine, and that allows bacteria in. The bacteria bring toxins with them. He knew that made things complex, but he couldn’t say any more. But there is recent work by Andreas Billinger’s lab in the Max Planck Institute in Berlin, showing that the bacterial protein-based toxins redirect the body’s immune response. The body fails to defend against the amoebae, and it fails to target the bacteria. Instead it targets the bacteria’s by-products, and in doing so it actually speeds up the degradation of the intestines, producing bloody diarrhea, dehydration, and sometimes death. The intestines are eaten by amoebae, bacteria, and the digestive system’s own acids, aided by the body’s own immune response. Histoyltica benefits tremendously, and reproduces exponentially. By itself it could do nothing, but in its mindless collaboration with other living and nonliving agents, it becomes a parasitoid, that is, a parasite that kills its host.

She fixed me with another fierce expression. One of her pearl earrings flashed in the projector’s beam.

Then she put all her papers down except one.

— Here is my theory, expressed as a series of three propositions. One. All life is continuous infection, con-tinuous parasitism, continuous illness. Amoebae like Entamoeba coli, or even the bacteria Escherichia coli, or Entamoeba dispar, moshkovskii, bangladeshi, or hartmanni are not harmless, it’s just that we don’t notice the minor symptoms they cause. Unless we have the runs or we’re bleeding out, we think of amoebae as harmless com-mensals. But they aren’t, they’re just too small and weak for us to notice them. We are all infected, we are all forever slightly ill. That is what we call “normal.”2

— How do you know that?

She put her hand on her hip.

— You and I have had a conversation about this. In medicine “normal” is usually defined as freedom from physical and mental illness. But there is no such thing as normal in this sense. There is no life without illness: illness is life, life is illness. Life is a “fitful fever,” Shakespeare said. He didn’t mean it literally, but I do. Socrates said it just before he died. He knew he was sick. Poison was the cure. “Organic life is an illness peculiar to our unlovely planet,” Adorno said. “Life is a sickness of spirit,” Novalis said. “I lie ill before you, God,” Master Eckhart said. “Everyone is sick,” Ernest Becker said and normality is “a cultural convention about the range and types of sickness that a society will tolerate.” So, Doctor Emmer, I don’t think you are normal or healthy, but I would say the same thing about myself. If you have a large parasite, like a tapeworm or a tongue louse, of course you will try to remove it. But when our parasites are microscopic, and we cannot see or count them, then we accept the idea that they are present, while also denying that we are affected by them. This is what I call psychotic dependency parasitism. You effectively embrace your illness as yourself. You know you are being damaged by parasites, but you also believe that you are normal and healthy. This is not as strange as you might think. It has been proposed that close to a billion people in southeast Asia and Africa have a slight but chronic lack of energy caused by their intestinal flukes, roundworms, and tapeworms. Their blood infections cause mild anemia, low blood sugar, and high blood pressure. They have soft stool and moderate diarrhea their entire lives. They show how it is possible to normalize lives that are lived with large numbers of parasites. This is all old news, studied by Samorini, Yelle, Libersat, Kaiser, Sbjieski and Bahfwo, Mundaralam and Jain. Do you know Giorgio Samorini?

She’d been speaking so quickly and quietly that no one had heard her.

— Do any of you know Giorgio Samorini? No? He researches animals who use psychotropic drugs. He made an excellent point about the Australian koala. It eats nothing but eucalyptus, which is a mild narcotic. As a result koalas are lightly sedated their entire lives. He then poses this question: If you are high your entire life, from infancy onward, are you high? Or are you just living life as you know it?

Blake shook his head.

— That is so cool.

— The people in Africa and south Asia who have been infected by tapeworms, flukes, and roundworms have cultures, customs, and possibly even religious beliefs that accommodate their slightly weakened condition and their chronic indigestion, soft stools, and mild diarrhea, so there is no awareness of illness. Like koalas. This is psychotic dependency parasitism. Their dependency is psychotic because, following the canonical definition in Freud, they are unaware of it and incapable of considering it without incurring trauma. So when I say all life is illness, I am drawing the consequences from current science, based on the last ninety years of research, beginning with the old experiments Vipesh so melodramatically presented.

— Thank you Vipes.

— That was not actually a compliment, Veeps. Two. I have noted that some amoebae are known to produce symptoms in concert with other organisms, especially bacteria. I believe that more cases like this will be discovered, until we reach a position where we can say: all human amoebae are actually partial parasites, that is, they harm us by working in concert with other organisms and chemical environments. Partial parasites are orgies of amoebae, bacteria, immunological responses, and organic toxins. We are not simply the victims of these partial parasites. Life is infection, and we are partial parasites as well as psychotic hosts.

Despite her weird breathless voice and her creepy aggression, Viperine had lost the class. Rebecca was frowning at her phone, which she’d half-hidden in her cupped hand. The other one was staring at her empty notebook. Courtney was like one of those half-asleep zombies that people in movies try not to wake up.

— How will you prove this? I asked.

— This is a proposal for further research. In the sciences prediction and theorizing guide research.

Courtney started to write that down, then stopped.

— Three.

Her voice was just a breath above a whisper. She looked at me with a curious expression.

— In histolytica-related infections, the body forms a new combination of organisms, partly human, partly amoebic, partly bacterial, and together they comprise what I call a full cannibal parasite. Together the participants eat their body’s own flesh.

— Viperine, what does that mean?

— We are all complex infections, all of us, and we collaborate in our own pathology. We ingest and infect ourselves. We are no longer human. We are complexes of chemical and biological vectors.3

— For god’s sake, Courtney said.

— That is the end of my part of our presentation. Vipesh and I have prepared a one-sentence conclusion, which Vipesh will present.

Vipesh obediently stood up again.

— Doctor Emmer, before I present our one-sentence conclusion, I want to say that we hope this double presentation describes two poles, if you will, of the understanding of Entamoeba. In my portion of the presentation, I showed how the early experiments revealed the role played by histolytica in human dysentery.

— You did very well, Veeps.

— Thank you. Now Viperine’s presentation, I have to say, it was a surprise to me, but I believe I have some very good answers to her criticism, which I can certainly gather and present to you. However I do see that the principal purpose of her presentation is to say: We have come a long way since the days of simple equations, such as kitten + fecal milk = horrible death, or U.S. Army soldier + pieces of flies = fulminating diarrhea. We now know that the world is more complex. So this is our one-sentence conclusion: we are all implicated in our own infections.

— We are infections, Viperine corrected.4

— We are infections.

— Thank you, Veeps.

— No, Veepie, thank you. Your research is truly exemplary. I wonder will I ever be able to understand science so wonderful well. I hope so, and I am learning every day so much. Together with Professor Emmer you are a most amazing instructor.

— Finished?

— Yes, we are, thank you, Doctor Emmer. We are open to comments and criticism, and we thank you for the opportunity to present our work in your laboratory.

Maureen looked at me as if to say, Can we go home now?

— Is this correct? Courtney asked, pointing at Viperine.

—The whole idea of Viperine might not be correct, that’s what I wanted to say, but instead I said, You mean her conclusion?

— That speech. Is that okay with you?

Viperine is as far from okay as you can get, I wanted to say, but instead I said, It’s speculative.

— He criticizes Vipesh very seriously, Maureen said.

— Vipesh should be allowed to answer, Rebecca added.

Vipesh raised his hand eagerly.

— Captain Emmer, I mean Doctor Emmer, I am more than delighted to present my small refutations of Veepie in a second paper. Courtney, to you I say I am very content with this joint presentation, and I entirely agree with Vipes on all the points. I deeply admire Vipes very much. And may I say, Doctor Emmer, this has been an exemplary laboratory experience. I have learned a great amount. I learned about the science, and also the laboratory, and also I learned about the clinical study of water purity, and also the ways science moves forward, and I also learned how to teach, I learned this from you, and so I want to say thank you, thank you very much.

Courtney made the finger-on-tongue gesture.

— Vipesh, you make me want to choke on my own vomit.

Maureen raised her hand.

— As a happy postscript I would like to inform us all that “nana” also means “pus” in Fijian.

— Oh my god, Blake said. It’s the best day ever.

The students gathered their things, and in a minute the lab was almost empty. As the door swung closed, I saw Blake in the hallway, trying to talk to Maureen, and Maureen ignoring him.

In the quiet I heard the static hum of the projector lamp. I turned it off, and then all that remained was the low hum of the lab refrigerator. I put the projector and its long unruly cord back on its shelf and swung the trembling metal cabinet doors shut.

In the silence my headache begin to relent to retreat wherever headaches go.

Tee had sent me an email with the subject “Christmas.” I deleted it. I sat a minute, vaguely staring at my vague reflection in the black computer screen.

Viperine walked back in, eyebrows raised, pointing to her watch.

— That was quite a presentation, I said.

— Thank you, he said, speaking in suddenly deep undertone, as if he’d finished his performance and was relaxing. Viperine was a kind of masterpiece: she, or he, was all about indirection, and he, or she, had pulled off perfect gender ambiguity using two completely different costumes: that mamma’s boy button-down shirt outfit, and now this ensemble that made it look like it was time for a night out in Berlin or Paris.

— You were very critical of Vipesh.

— He gave me his notes. I made a number of suggestions but he opted to keep the material as you heard it.

Viperine was searching for something in an aluminum briefcase.

— What happened to your leather bag?

— It’s at home.

He looked at me slyly. His long fingers walked along the edge of a sheaf of papers. He pulled out an envelope with my name on it and held it tenderly between two opalescent nails.5

**<Chapter 14 A Lovely Story About Food Poisoning>**

The next day Viperine was back in the lab. She was talking, as she usually did, in a breathy whisper, something to do with parasites. I was sitting at the front desk logging water samples, and I wasn’t really listening. She leaned over to see if I was paying attention, and suddenly I imagined walking around the desk and kissing her. She’d stand up, while we were kissing, and I would reach over and lock the door.

Then I reminded myself that I wasn’t actually attracted to her, or him, and that my mind was in an especially disorganized state, and that I should probably pay attetion to what she was saying, if only to be polite.

She leafed through the papers in her aluminum briefcase. Her head was slightly bent. There was a beautiful and distinctly feminine curve to her neck.

— Vipesh is a dedicated student of biology, she said, and I am sure he will be successful in the future.

After we kissed I’d look into her eyes, and she’d give me a look, and I’d run my hand up underneath her shirt, feeling the warm cotton on the back of my hand. And that would be the beginning of our weird relationship.

She was still searching in the briefcase—or was that a bit of acting like everything else? What kind of biology student carries an aluminum briefcase? Hadn’t she noticed biologists use backpacks?

At last she found whatever it was. She pulled her chair forward and handed me a tourist brochure, advertising MULU, THE AMAZING BAT CAVE.

Again she leaned in toward me, elbows close together on the table, hands clasped.

— It’s a park in Borneo. The largest cave there has over four million bats in it. Thirty different species.

She turned a page for me. Her beautiful finger, the nail carefully manicured and painted with transparent gloss, pointed to a picture of a cliff face, with a cave opening in it. Out of it came a helical stream of bats, so far up in the air they looked like twirls of smoke.

— One of the species is *Cheiromeles torquatus,* the Sulawesi hairless bat, often called the “naked bat” because it has almost no hair.

— Must be lovely.

She pulled out a photo.

— Bats at the top, earwigs on the bottom.

Her gestures were graceful, as if she was indicating points of beauty in a painting.

— These naked bats have astonishing parasites. The bats secrete a skin oil. It is assumed the oil performs the same function as fur, protecting the skin. But it also attracts very large parasites, a kind of earwig, *Arixenia esau*. They grab onto the bats and ride them piggy-back. The earwigs seem to feed on the shed skin and the skin oils of the naked bats. The English research group sent me these pictures. They were taken inside the cave, on a concrete platform built for tourists.

Viperine’s strangeness, I thought, lovely and endless.

The naked bats looked like old men, crippled and twisted. Their paper-thin skin was creased in fine folds. It hung in flaccid drapes over their thin bones.

In the second photo a bat’s head was turned away. I pondered its small round skull and Mickey Mouse ears. What kind of a face could go with that body? Its wings were folded. It hung on with a single claw. Above it was a foot or hand with five fingers uselessly splayed.

The bats were awful looking creatures, like flayed mice covered with greasy plastic cling film. Like starved mice shrink-wrapped in old men’s skin. They had little rat’s tails that probably wagged as they struggled across the concrete.

— The earwigs fall off the bats when the bats fall from the ceiling of the cave. Young bats can’t fly. The ceiling in that cave is a hundred and fifty feet high. The bats can never even find the walls of the cave to begin climbing back up. They gather on the concrete platform.

— In situ, when the bats are hanging from the cave ceiling, the earwigs live in the folds of the bats’ wings and in their gular pouches. They only come out to forage. There are also bat fleas, which look like skinny spiders. They hitch rides on the earwigs so they can get from one bat to another. And flightless bat flies, which also look like spiders, and by the way they have their own parasites called labouls, which look like tufts of white fur.

The naked bats pulled themselves along with their claws bent backwards, like cripples in some medieval painting. Earwigs crawled around them, over and under them.

In another photo the bats seemed to be trapped in a trough in the concrete. It was hard to disentangle their bodies.

— All this is well documented. In fact some tourists feel sorry for these baby bats, because they will die and the earwigs, cockroaches and spiders will consume them. But there is something even more interesting. I have found out that these naked bats share another parasite with their earwigs, I mean aside from fleas. This second parasite is microscopic, a species of *Entamoeba* named *nyctumia*. It is an intestinal parasite of insect-eating bats such as the Sulawesi naked bat, but until last year it was unrecorded in earwigs. The *nyctumia* amoeba forms spores, which are excreted by the bats. Some of the bat feces stick to the bat. The oil they secrete to protect their skin forms a mat of dead cells and fecal matter. I should have said the oil is rancid because it is secreted very slowly, and it has a rich microbial subculture. That is what the earwigs eat, and when they do they also ingest the amoeba cysts. So the wonderful part is that *nyctumia* actually continues its life cycle in the earwigs’ guts. They have merozoite and schizont stages inside the earwig guts, just like they do in the bats. No one knows why. The amoebae encyst, and they are excreted from the earwigs just like they were excreted from the bats, and some of the mixture of earwig feces, amoeba cysts, oil, skin cells, and bat feces is inevitably ingested by the young naked bats.

In one photo an earwig stalked a bat, hungry for its oily skin.

The earwigs had long feelers and nasty-looking pincers projecting from their abdomens. They looked like they could easily eat the bats. They were fat and healthy, and much larger than parasites should be. It would be like having two-foot-long cockroaches crawling over you.

— They eat the earwig feces by mistake while they groom, that’s what one of the researchers told me, but actually I doubt they groom because they are lost, they can’t find their mothers, and they are hungry and desperate, so they probably eat whatever they can, which means they eat this mixture of their own feces, the earwigs’ feces, and their own sloughed-off skin cells. And that diet is “enriched,” as it were, with amoeba cysts.

I nodded. For Viperine, this was the perfect story: it featured multiple parasites and several kinds of feces, and it was revolting.

In another photo I saw the naked bat’s face. It had a dog’s head with a puggish muzzle. It seemed to be looking at one of its enormous parasites. Like me, regarding Viperine, I thought. I was the host, lost and exhausted, old and ugly, and Viperine was the fast-moving parasite, circling, hungry.

— So far, she continued, this is a typically complex protozoan parasite life cycle, even though it has never been recorded in bats and earwigs. But there is more. There is recent research, just this year, showing that the amoebae have their own parasites! And Doctor Emmer, this is going to really amaze you. These are giant viruses, *Mimivirus,* up to half the size of the amoebas they are inside. The amoebae excrete some of the viruses while they are inside the earwig. The viruses attack the earwig’s hindgut, raising acid levels and making it possible for the amoebae to have sex. After they have sex, the amoebae ingest more viruses, and eventually the earwigs excrete the amoebae, along with their viruses. Some of that gets eaten by the bats. These viruses have also been found inside the bats, but no one knows what affect they have. Earwigs are parasites of bats, amoebae are parasites of earwigs and bats, and also hyperparasites of bats, since they reproduce in earwigs, which are parasites of bats. The viruses are naturally parasites, like all viruses are. They are also hyperparasites of earwigs and possibly also of bats, and also hyperhyperparasites of bats, because they parasitize amoebas that parasitize earwigs that parasitize bats.

She looked satisfied, as if she’d been eating cake.

— And these *Mimiviruses* have DNA from parasitic bacteria. They may have taken over some of the functions of a species of parasitic bacterium that once lived inside these amoebas, inside the earwigs, on the bats. The English group estimates 5,000 base pairs of DNA were stolen from bacteria that may have been parasites of these same amoebae. I want to study all of it.1

She clasped her hands so the fingernails pointed inward, almost touching her palms, leaving an open space inside about the size of an egg.

— You know there are very few documented hyperhyperparasites. At one time it was thought the monogenean flatworm *Cyclocotyla* was a parasite of the famous “tongue louse” which attaches itself permanently to the tongue of the sea bream *Boops boops*. But it has been shown that the flatworm just hangs onto the “tongue louse,” so they are both simple parasites.

— This is your research project?

She beamed at me.

— I got into it because of my mother.

— Your mother is a scientist?

— No. She doesn’t know about these things. I mean, she knows about the caves.

— She’s been to Borneo?

— No.

— So she is interested in bats.

— Caves. Well, not really. I mean, just one cave. See, I have this unusual family. My father had to go on reduced contract last year, because my mother has been in poor health. My sister can’t help, because she has a family in Scotland, and they have their own issues.

— I’m sorry.

— Don’t be. She has her own life. My father still makes a good salary. He is a Vice President of Remuneration Policy at the Bond AU Insurance Company, at their office in Moulins. He can support us. Also, my mother’s health problems are not physical, they are mental.

— I see, sorry.

— Don’t. My mother has become delusional.

She raised one eyebrow, and then the other.

— It started two years ago. She began complaining that her food tasted bad. She did all the cooking, but sometimes we sat down and the salad was missing, or the main dish, the meat or the stew. She would say it turned out badly and she had to throw it out. At first I didn’t know what to think. When she wasn’t in the room my father said she was getting old. The sense of taste changes, he said. She told us there were odd tastes in the food she cooked, like licorice in a beef stew, *racine de réglisse.*

— What?

— *Ragoût de boeuf à la racine de réglisse et vinaigre de malt,* it is perfectly ordinary, except my mother never cooks it. Sometimes she tasted a spoonful of the dinner she had made and pursed up her lips and stuck her tongue in and out like this. Some days she hardly ate anything. Once she made a roast chicken with lemon slices and garlic, and she ate only the lemon slices. Then one day she was sampling a soup she had made for herself, making funny faces. She reached over to my bowl and took a spoonful, and said, “That’s funny, why is yours fine and mine isn’t?”

— My father and I tasted her soup, and my soup, and his soup, and we couldn’t tell the difference. She kept dipping her spoon into her soup, and mine, and his. She said her own bowl was off. We got up and went back into the kitchen and tasted from the pot. I couldn’t tell any difference, except that the soup in the pot was a bit saltier. But she said, “That’s not funny,” and she stared at both of us one after the other. My father said, “What’s wrong, dear?” And she said, “What did you do?” And he said, “What do you mean?” And she said, “Zacharie, you poisoned me?” And then she just looked at him, with a kind of fixed stare, not so much angry as confused. He hugged her, and said of course not, and she hugged him. But she looked very unhappy, and she wouldn’t sit down at the table again. My father and I took the dishes and helped her clean up.

Viperine gestured delicately over the desktop, as if she was moving little marionettes of her mother and father.

— Nothing happened for a week or two. My mother tasted everything, over and over, and we just let her do it. Then one evening we were having *poule au pot*. She had been eating bread, which we got from our boulangerie, and drinking wine, but she had hardly taken a half soup spoon of the *poule au pot* that she had been making all day long. All of a sudden she put her spoon down, and said, “I just cannot go on like this. My god, why are you trying to poison me?” My father said, “I am not, why would I?” But she looked at him with a vacant horrified stare, like the way a captured soldier might look when he knows he needs to run away immediately, to save his life, but he is too weak to move. My father said, “I am not poisoning you.” Over and over, “I am not poisoning you. I love you. I would never do such a thing.” After that, things got worse. First mother said we had to have all our meals bought and brought in, and we did that, but she began to wonder about the cans and jars of food. She said, “Where did you get this kind of tinned asparagus? I have never seen this before.” And I said, “I bought it at the Monoprix, you can go see.” She wouldn’t answer. One morning when father was at work she took me aside in the hallway, even though no one else was in the house, and whispered, “I know he is having an affair. That is why he is trying to poison me.” And then she broke down, sobbing and shaking, and went off to her room.

— That’s awful, I said, I’m so sorry.

I thought I should be trying harder to show I believed her, but it wasn’t easy.

— Stop. We developed a routine. My mother cooked for us, but not for herself. She bought in bulk from Picard, they sell frozen food, and we brought in the frozen food in two large shopping carts and put it in freezers in the basement. But one day she said, “Zacharie, I can’t eat this.” And he said, “Why?” and she said, “Because you are trying to poison me.” And he said, “How could I poison you with food that is sealed in a factory?” And I said, “Mama, remember you bought the food yourself, you chose it yourself.” But she wouldn’t argue. After that she would only eat bread she had bought herself from our boulangerie. My father and I knew we had to do something to prove he wasn’t trying to murder her. I told her I could take the Picard packages to a laboratory and have them certified. She trusts me, so she said yes.

— You tested her food?

— Every week, when I’m home, I take one box of each kind of food we’ve bought from Picard, and bring the boxes to the medical lab­ora­tory at the IUT Montluço­n-Moulin­s-Vichy, in Mon­tlu­çon, or at least I tell her that’s where I’m going, but really I drive to Cosne d’A­lli­er, which is closer, and I go to a café there, and I sit all day long and read my books, and wait until 4PM, and then I drive back home. I tell her the sci­ent­ists at the IUT have cer­tif­ied her food samples and that they are safe for human cons­umpt­ion. Last summer I did that a d­ozen times, and then in Sep­tem­ber or October she started asking me, “What did they say, ex­act­ly? What tests did they run?” And of course it was hard to answer, and it is hard to lie to your mother, isn’t it?

For a moment she seemed lost in thought. She combed her right eyebrow with the fingernail of her index finger. Her left hand was suspended in space, the fingers moving slowly.

— So my father and I thought up this plan. His insurance firm has a client who does paper manufacturing, and he asked a person there to please find someone who could make official-looking documents. I went online and looked for health reports, to see what they look like, and I printed them out and gave them to my father to give to his business acquaintance, and a few weeks later they came back with very official-looking forms certifying the health of the food. The forms say “Agence du Médicament,” and they have the IUT address, and my father has someone at the office type onto them with an old-fashioned typewriter, and stamp them with a rubber stamp with the date. They have food groups and chemical types listed, and they all say “not present,” “no contamination,” “no risk,” and they’re always signed in a scribble by the Minister of the Agence du Médicament, Montluçon Branch. I bring them to my mother in a heavy clear plastic bag with the melted remains of the Picard food, and she believes it. I don’t think that she will ever see through that. She would never imagine we could do anything that devious.

And yet you can, I thought, you’re doing it now. At that moment it was hard to imagine what she could possibly say that I might believe. Maybe if she admitted Catherine put her up to the whole thing, that she was just a farm boy from Quebec. Or maybe it was all true, and she was about to ask me to fabricate documents proving her mother’s drinking water was free of poisons.

— We don’t speak about this at dinner, in fact we hardly speak. My father and I eat our meals, the same kinds of food she has always prepared—she is a very good cook, and I love to stay there, to eat what she cooks—while she eats her Picard frozen dinner from the microwave. We are mainly silent because my father and I know that she believes deeply and permanently that he wants her out of the way.

— Is your father actually having an affair?

— Absolutely not. My mother takes me aside and says, “I know what he is doing. I know he is seeing someone. He is going to leave me, be both know it, and then you and I will be alone.”

— You’re sure?

Her stories are very carefully constructed, I thought. They include things that would be hard to make up. She must rehearse a lot.

— How do you know your father is faithful?

— My mother is not in touch with reality.

She brushed the front of her shirt down, very lightly, revealing nothing.

— She may be onto something.

— I used to say, “Please, mama, think how much he loves you. He has taken two-thirds pay so he can stay with you four days out of the week, that is exceptional, doesn’t that mean anything?” But she just looks sad and says, “I wish it did.”

— He could invite her to join him at work.

— No.

— Why?

— That would never convince her. She is too hurt. Too paranoid.

— Sorry I asked.

— Do not say that. That is my life. Maybe yours is better.

She put her left hand on the table, as if she was steadying herself. It was a practiced move, an invitation for me to put my hand on hers to comfort her. She wasn’t a put-up joke or an actress, she was a compulsive liar. Yet she looked genuinely upset. She was complicated. We would make such an interesting couple. I reached for her hand.

— Now I come to the bats, she said, retracting her hand. Last winter, one day mama and I were watching television. Father was out at a business dinner, at least that’s what he said, but I knew he was just finding excuses to stay away from the house. On the television came a show about Borneo, and the amazing caves they have there. They have some of the world’s largest caves. The biggest of all was discovered in 1980, when a group of English cave explorers hired a plane and flew over an uninhabited part of Borneo, a very mountainous place, with thick jungles. They took aerial pictures. They were looking for places where rivers come out of mountains, because that means there will be caves. They found a couple of places, and they made an expedition. They went to one of the places, and followed a river up into a cave in a mountainside. At some place inside the cave, the walls just spread out, until they could no longer see them. “The left hand wall faded from sight,” the caver said, “even in the combined light of our three headlamps. Soon the roof got so high it disappeared into the darkness.” The were in an enormous black room, so big their lights could not illuminate the walls. As they walked the sound of the river receded and finally the cave was quiet. They decided to walk around the room, keeping one wall always on their right where they could see it, until they came back to the place where they’d started. They walked for eight hours, and then ten, and still they did not get back where they had started. The person on TV said that one time they got lost because they thought they were following the wall, but it turned out to be a house-sized boulder that had fallen from the ceiling of the cave. Somewhere along their walk one of them panicked and they had to calm him down before they went on. That was unusual, the man said, because they were all professionals. They decided never to tell anyone which of them panicked. Sixteen hours later they came back to where they started. And they were still way inside the cave, way out in the jungle in Borneo. He said they were utterly exhausted when they finally got back to camp. They had been gone two days. The next year they went in again with surveying equipment. They realized they had found the world’s largest cave chamber. It is big enough to hold 16 football pitches, and the ceiling is 250 feet high. They showed photos of people in that cave. The photos are just black, everything is black, and down at the bottom of the picture there’s a little spelunker with his headlamp, and another, and another.

She pinched her fingers, and squinted at them.

— Like glow worms.

She paused to get my reaction. It was a very well rehearsed speech.

— Amazing, I said.

— Mama and I watched this show, and it talked about how they went on and found other caves, some very deep. One of them was a pit 900 feet deep. The large chamber has never been lit, because there are no lights strong enough to take a picture of the whole chamber at once. That’s what they said on TV, and it turns out it’s true. If you search for it on the internet, you see there are no pictures of the whole chamber, only small parts. Little people in the darkness, like glow worms. The TV show said the whole area in the jungle has been declared a UNESCO World Heritage Site, so it will be preserved. It’s called Gunung Mulu Park. The big cave is hard to get to, because it is off in the jungle and there are no roads, and some caves are closed except to professionals. But if you go to this park, Gunung Mulu, you can go into the jungle and visit some caves, including the one with four million bats. It is safe, there are boardwalks with railings. Now there is a hotel in the jungle, which is built up on high cement columns because the jungle always floods, and because it is full of animals.

She looked upward to conjure the height of the columns, then quickly caught my eye.

— Mama and I got fixated on that place. She said that if she could go live there, it would be safe, she could eat anything. My father would never follow her there. She kept saying, “He hates caves, he told me that once. We can go there together, he’ll never go there, he’ll stay with his girlfriend and he’ll forget me. We will be safe.” I said to her, “Mama, that’s crazy! That place is on the other side of the world, it’s as far from France as you can get. There are no supermarkets there. You can’t go, there is no church there. You saw the natives,” I told her, “they look scary. They have no teeth, they hardly wear any clothes.” But Mulu stuck in her mind. She went on the internet and looked at pictures. “He’ll never go there, he can have his girlfriend,” she said. “It’s warm there. Look at all the fruit.” We found pictures of the inside of the bat cave, with the four million bats. It looks like an airplane hangar. It has a huge mouth, you could fly a big plane into it. We sat at the computer together. There are piles of bat guano a hundred feet high. We found out people get sick there. “It is not a healthy place,” I told my mother. “You have to get inoculations. People get terrible fungus infections living in the jungle. There are poisonous snakes, including cobras, and flies that sting. There are sweat bees, they lick your sweat and sting you,” I told her, “and you are always sweating, so they are always licking and stinging. There is no dry season. Mould grows everywhere.” But she said, “It’s so far away. It’s warm, there’s a hotel. Zacharie would never go there, he’s too selfish.” We saw a picture of a tiny caterpillar, no bigger than your little fingernail. It looks like a piece of white fluff, a speck of lint. It stings so badly that you scream for an hour. We read that there are lots of exotic plants in the jungle, including ginger and sandalwood, but there are also plants bristling with spines that stick into you and break off and get infected. And there’s a tree called the poison bark tree. The natives in the jungle use it to make poison arrowheads, and if you brush against it, and you have a cut in your skin, you die. There is a plant the people call a “dog bite plant,” and if you feed it to your dog it snaps viciously at everything. The natives use it to make their dogs crazy so they will hunt the dangerous wild pigs. “I won’t walk in the jungle,” my mother said, “and we won’t have a dog.” We read that it rains all year long, that the heat is horrible. “I love summertime,” she said. I showed her the snakes. “If you’re sick or hurt there, you cannot be saved,” I told her, “you would die for sure.” “No one lives forever,” she said. We found out the reason why no one lives near the caves. It’s because the land is made of slices of limestone. Sometimes shards of stone stick up fifty feet high and no one can get through them. In other places the rock is covered with jungle plants, and you can slip and slide into the crevices between the blades of rock, and break your leg, or crack your skull, or get wedged in between them, and then the ants will swarm all over you.

There are many poisonous jungle ants, and they march through the jungle like black rivers. We watched a video of them crawling all over a man. In a second, they crawled under his clothing. In two seconds, they were on the person’s head, biting. Of course the water will make you sick, I said, it is full of amoebae. I showed her everything I could find, but it just made her more certain. She said, “We will be safe there. Zacharie will never go. He’ll be relieved.” She became very determined. She emailed a travel agent and tried to buy tickets, but luckily the agent is someone I have known since grammar school in Moulins, and he called me, and I persuaded him that if she tried to buy the tickets, Zacharie would stop the payment. So she didn’t get her tickets then. But she is planning, and she may go anytime. This is why I am interested in the bats. I researched the place, to see if maybe I could go with her after all, as an adventure, so she would come to her senses. I am sure she would be miserable there, she’d see how crazy she was for wanting to go, and then she’d go back home. She might even see that her entire idea about my father is crazy, the jungle might shock her into seeing that. I was researching, thinking, what can I do there for a few weeks, or a month? And that is how I found out about the naked bats, and the work that’s being done by an English team from Sussex. They’re the ones who discovered the hyperhyperparasites.

— Are you going?

— I have so much to tell you, Doctor Emmer.

— Samuel.

She gave me a mysterious smile. I noticed something in her expression I hadn’t seen before. She was looking slightly up at me, as if she was wincing. As if I had threatened to hit her. Her eyes were full of mistrust.

— Samuel, I wrote to one of the people on the Sussex group, Lauren Brennenstuhl. She said I would be welcome to join them in the next research season, which is August. I could be an affiliated fellow. I would have to pay my own way, but I could possibly contribute to papers they plan to write next year, provided I am associated with an institution in Canada.

— The Water Department?

— I want to apply for a PhD program here in Canada, to do doctoral research on parasitism. The Sussex group is planning two papers, a major one for the *International Journal of Invertebrate Ecology,* and another one for the *Annals of Protozoology.* The first is the result of work they are doing now, which will show that the *nyctumia* amoeba lives a complete double life cycle in the guts of the earwig and the naked bat. Doctor Brennenstuhl said her group believes the amoeba reproduces asexually in the bat’s liver, making merozoites that divide and release schizonts, but that when the cysts enter the earwig, they actually divide sexually, in a kind of macrocyst. The amoeba prefers to have sex inside the earwig, and it prefers to asexually divide inside the bat.

— That seems unlikely, I said, for no particular reason.

— Well, it is surprising perhaps. But as I am saying, the amoeba itself ingests, hosts, and excretes these giant viruses. Doctor Brennenstuhl told me they think there are two strains. The second one releases toxins in the bat, and they degrade the bat’s intestinal linings so that the amoebae can ingest their tissues more easily. This fits my theory. I believe no organism is simply a host, or simply a parasite. We are all composite partial parasites, and we collaborate in our own parasitism. This is tremendously exciting. It is an entirely new field, multi-species collaborative partial parasitism.

I wasn’t really listening. I was thinking about her face. She was enthusiastic about her theory, at least in her cold way, but her face said something different. She looked hurt.

— I think the two viruses, their toxins, and the amoebae work together as partial parasites. Unrelated species and chemical vectors that “collaborate.”

— Like you and Vipesh.

— He is doing his best.

— Or you and me.

How practiced she was. Nothing surprised her.

— Doctor Brennenstuhl is excited that they are studying hyperhyperparasites. I think the team from Sussex have very good ideas. They are on the right track, but I also think they are missing things. The first viral strain is completely unstudied. The amoebas and viruses collaborate when they prey on the earwigs, that is partial parasitism.

— Partial hyperparasitism.

She smiled so briefly it looked like a twitch. Maybe that’s what she looked like when she was sincerely happy.

— Also, she said, there’s a new theory, by Stephen Blythe, he’s a mathematician, he has modeled the possibility of indefinitely extended hierarchies of parasites, one on the other, forever. He has shown it’s possible. Towers of parasites don’t collapse, there may be great chains of parasites. I want to find those. The pea aphid, a parasite of the pea plant, harbors a nested set of parasites. Within the aphid is a larva of the parasitoid wasp, Aphidius smithi. This larva can in turn be infected by the larva of another parasitoid wasp. This hyperparasite can be colonized by larvae of a hyper-hyperparasite, yet another parasitoid wasp. It is likely that last wasp has endemic gut bacteria that have viruses, making the virus a hyper-hyper-hyper-hyper-hyperparasite.

She curled the little finger of her right hand around the back of the page she was holding.

— I can find them. The key is flies. There are lots of flies on the guano, where the bats end their life cycle. There are bat flies, filth flies, eye flies, and face flies, but mainly there are phorid flies, that is corpse flies. I think I love them more than any other creature. Corpse fly maggots produce alkaline feces that condition the carcass for more feeding. Adult phorid flies feed on the slurry and lay more eggs into it. And corpse fly maggots have inquilines, those are companion species that swim with them in the half-digested corpses of naked bats. The corpse flies’ inquiline companions are called filth flies. Their larvae are kleptoparasites, they steal the digestible flesh produced by the corpse fly maggots. And there are guano ants and parasitoid wasps that zombify the ants’ larvae, and that is probably done by viruses, no one knows. They must be connected, I don’t know how they are connected.

She fell silent. She seemed dejected.

— I forgot to say the parasitic earwig is viviparous, it produces live offspring.

Her little finger uncurled from the page. The rest of her hand remained still. She was absorbed in what she was about to say. She wasn’t in some precarious fantasyland like I was.

— These earwigs have a deeply folded, invaginated oviduct, she continued, and it may be regarded as a uterus. The cells are rich in tracheal tubes, and have microvilli that extend into the uterus lumen. In other words, very uterus-like. They give birth to live young.

It was fascinating that someone as utterly strange as Viperine, with theories so close to crazy, a person who was probably acting, inventing, and hallucinating all at once, and who seemed to be signaling me coyly with her little finger, that such a person could be so astonishingly boring.

— So?

— So! The earwig has live births, it evacuates its young directly into the mix of dead skin cells, skin oils, bat feces, and earwig feces that coats the skin of the bats. Live birth helps parasites find their host, helps them to find places to grab on. But it also helps their own parasites find them, because it’s easier to crawl into the mouth of a newborn baby than crack into an egg. Amoebae can enter the orifices of the newborn earwigs very easily. Eggs would be impenetrable. See how everything in this scenario helps everything else? I think the viruses that are in the amoebae can penetrate the blood barrier in the earwig, enter the uterine wall, and infect the larval earwig before it is born. It is born infected with viruses. It serves as a toxin factory. As soon as the earwig is born, the amoebae in the mother’s skin slime reinfect it. A living thing is made into a chemical repository. The hyperhyperparasitic viruses and the hyperparasitic amoebae produce chemicals for each other. We know viruses help amoebae to have sex...

— Sexually reproduce. Amoebas don’t have sex.

— How do you know?

Her eyes gleamed.

— Fine.

— So I believe it is also possible that the chemicals produced when the amoebas have sex direct the behavior of the earwigs, and that the earwigs stimulate the naked bats, possibly even provoking them to have sex.

— I thought you said the naked bats were immature, and that’s why they fell off the roof of the cave.

— No one knows when naked bats start to have sex. Falling a hundred and fifty feet might be an aphrodisiac.

I looked at her as directly as I could. She dropped her eyes and frowned.

— For me this is very beautiful. The association of the naked bat and its oversized arthropod parasites. The wonderful way the amoeba prefers both its hosts, one for having sex, the other because it tastes good. A semi-living thing, the virus, which has stolen the code for parasitic bacterial DNA, deep inside another living thing, the amoeba, deep inside another living thing, the larval earwig, which is inside its mother’s quasi-uterus, the mother who is holding tight to the skin of the naked bat, which has lost its mother, but it is inside an even larger mother, the cave, an enormous stone womb inside the jungle. These things are all one enormous organism. The viruses coat the bat’s digestive tract, producing toxins and enzymes. I think I can show those chemicals stimulate the bat’s immune system, forcing the bat to help the amoebae digest its own flesh. The bat collaborates in its own infection. And why? Because the entire system is an infection. The organism is its own infection.

“Thank you,” the doctor said, “perhaps you would like to rest.”

She grinned a toothy grin.

— The whole thing is eating itself. None of these organisms could live on its own.

— The bats could.

— Perhaps.

— Definitely.

Her entire mouth moved over to the right side of her face.

— I hope not. Perhaps. I hope to find out. It is the same with us, Samuel. Just as students need teachers, teachers need students. We infect each other.

Another Marilyn smile. She folded her hands on her lap.

There was a strange similarity about all her stories. The other day it was orangutans and feces, then kittens and feces. Today bats and feces. There is her disturbed mother in Moulins, obsessed with toxins. The daughter in Guelph, with a theory about self-administered poisons. The earwigs in Borneo, nurturing their own poisoned daughters.

An interesting person, I thought. In the same way as having all your teeth pulled and replaced with porcelain is interesting.

— The paper they want to write for the *Annals of Protozoology* concerns the earwig’s penises. It seems that in genetically primitive earwigs, including this species, the males have two penises, a right one and a left one.

In the same way as crashing your car and hurting yourself in order to get the insurance is interesting.

— Doctor Brennenstuhl says earwig specialists study why they only use their left-hand penis. Earwig penises are not symmetric. The left one is more elongated. The right one is much thicker. As you know earwigs have pincers at the ends of their abdomens. Males have curved ones and females have straight ones. They use them to hold onto their mates, so they face away from each other when they mate. The males use their left penis, the long one. Both penises come out between their pincers and stick out toward the female. The long one goes in. The thick penis is right there, but no one knows what it does. Doctor Brennenstuhl is also interested in what has happened, in evolution, after earwigs. In more advanced animals, I mean animals with one penis, like you, which penis has survived, the right one or the left one?

I grinned, because I was supposed to.

— These *Arixenia* earwigs in Borneo are primitive double-penised earwigs. The Sussex group found that the amoebae also reproduce in the earwig’s reproductive tracts, and they especially infiltrate the male earwig’s right-hand penis, the thick one, the one it doesn’t use. I believe the parasites have invaded the right-hand penis and they use it as food. Inside the earwig’s right-hand penis their life is perfect: they can eat as much of the penis as they want, because the host won’t die and it can still reproduce. It is possible that the amoebae are aphrodisiacs. The feeling of having your right-hand penis eaten may be sexy, it may prompt the earwig to mate.

— Another lovely theory, Viperine. Does the right-hand penis become erect?

— Yes, and it ejaculates.

— According to you, it ejaculates amoebae.

— Yes! I want to observe these two penises close up. I believe the earwigs provide their fat penis to their parasites, to give them extra energy, and in return they get an aphrodisiac jolt. And when they have sex with other earwigs, they produce little earwigs and also little amoebas.

I had an odd sensation, as if the chair was sinking imperceptibly, floating down through the floor. She had exhausted me. I pretended to look at my watch. That feeble gesture was enough. I was saved.

— I should go. I just wanted to tell you that your students, my colleagues, I guess, they’re quite good. Vipesh is full of ideas. We work exceptionvally well together. Courtney is sharp. I don’t know the name of that guy...

— Blake.

— Or the others, who are quiet. At any rate I am going to Moulins, and then I will be back to apply to PhD programs in Canada.

— Great, I said. I hope you can keep your mother at home.

— We think we will both go to Borneo, I can feel it.

She stood up, and so did I. She put a letter on my desk, and clasped my hands in both of hers.

— And of course you are welcome. Perhaps…

Then, abruptly, she left.2

In the quiet her words echoed in my mind. Each one softly pronounced. So carefully chosen. Parasites. Penises. Perhaps. The little burst of breath on each “p.”

14

**<Chapter 15 A Compression Engine>**

With Viperine out of the lab my mind refilled with other voices and faces. Rosie and then Anneliese, an old friend of Catherine’s I had met the month before in Frankfurt. Catherine said she’d told Anneliese all about me and we’d get along just perfectly.

— She is an unemployed scientist, Catherine said. Her brother supports her, and she stays home and works on her theories of biology. We’ve been friends since we were in England, years ago.

But the evening I met her was bewildering. Anneliese complained about Catherine, saying Catherine stole all her work. Anneliese was full of grievances. She had a feud with a neighbor, her niece was lazy, her uncle was senile, the people in the university where she used to work had pushed her out. She even insulted my job, even though she didn’t even know me.

When I got back to Canada I asked Catherine why she thought I’d like Anneliese.

­— Didn’t you get along with her? Catherine asked.

— Well, of course not, I said. She insults everyone, including you.

— But you came to an arrangement?

— There is no arrangement, I said. I’m not going back.

A few weeks later Anneliese called me when I was in a hotel. She had talked to Rosie, because she needed to get my phone number, and apparently Rosie was very unpleasant, and even hung up on her. Anneliese thought I should have Rosie fires. She complained about all sorts of things, including the design of European websites, scientists who refused to answer her questions, and dimwitted students who were only after money. She said all cars are ugly because they have round rubber feet. Then she told me about her work. Back in England she and Catherine used to analyze soil samples for traces of genetic material. They discovered new species of bacteria and viruses based on fragments of DNA, and it was wonderful, Anneliese said, up until Catherine stole all her work and left to go to Canada.

Then she called at six-thirty the next morning and talked for two more hours about how awful her life was, and how no one understood her.

— My life gets worse day by day, she said. It’s as if I live at the bottom of a well, in freezing cold water.

I told her I could sympathize, because my own life was becoming hard to tolerate. I said I felt compressed, as if I was in a room that was narrowing, a room where the walls are squeezing in.

— I don’t understand that, she said.

She went on to tell me about a horrible skin rash she had on vacation, how her fingernails were crumbling, how the dean of the university where she used to work was an awful pompous idiot, how her former colleagues were like hyenas ripping pieces of flesh from her throat, how an elevator operator made fun of her and got down on his knees and begged her to stop complaining. Just when I was about to hang up on her, she got very serious. She said she knew her mind was not right.

— There are things in my mind that shouldn’t be there, she told me. Like when lightning flashes at night and you see enormous clouds that are invisible in the darkness.

Again I was going to try to express some sympathy, but she interrupted me and started talking about jigsaw puzzles. She compared her life to a defective puzzle, where there are extra pieces and pieces missing and it can never be put together into a beautiful picture. That surprised me, and I started to tell her about Martha’s jigsaw puzzles, but she cut me off.

— I am tortured, she said. But when I sleep, I sleep strongly. Like a little bee in a poppy field. Overwhelmed and hypnotized by exhaustion.

That was sweet, but then she started in again, this time about her brother, who failed to understand anything about her work, because he was dim and simple and always tired. I suggested she could get away for a while.

— Why would I want to live out my life in some sunny paradise? she said.

— Not a paradise, I said, but maybe some change of scene.

— Why would I want a simple life with no stress, where I drift through my days, what in the world would make me want to live like that, when I can stay in my brother’s apartment with a tangle of worries buzzing around me like biting flies, my pencil clutched in my hand, staring forever at the next blank page?

After those two phone calls I wanted nothing more to do with Anneliese, and it occurred to me that Catherine might be able to mediate. The following weekend I was in Oustic with Rosie, so I had to cancel the Saturday lunch wuith Catherine at the Yellow Hat. We finally met at the end of the month.

— Anneliese is like that, she said.

— She is basically horrible, I told her. I can’t stop her from complaining.

— And you’re different how?

— Well, I don’t mistrust everyone in the world or go on and on about my grievances.

— Really, she said.

Catherine may be right, in her own way. Anneliese lives in a narrow world, like I do. She says she is alone, even though she has her brother, her niece, and her uncle live under the same roof. Anneliese also talked about her childhood memories, and some things she said sounded right.

— We need to believe we have them, she said. Even if we have lost them, we need to keep thinking about our memories. They are the lie that keeps us sane.

Anneliese is rude to everyone, probably even to Catherine. But the things she said in Frankfurt and in those two long phone calls sounded like they were rehearsed just for me.

— I wonder, she said at one point, do us ever know how we end up where we are? We’re all little boats pitching on a choppy sea, floating off we know not where, drifting away we know not why, most of the time happy, bobbing in the water, bemused by the lovely weather or the salty waves or a passing seagull, smiling and joking, humming and singing, dozing and laughing, until at last our little boats tip over and we drown.

She is coming to Guelph at the end of March, so I will be able to ask her all these things.

**<Chapter 16 Scanning the Blank Calendar of Childhood>**

When Viperine left I turned off the bright banks of fluorescents and walked around the lab, putting away the students’ equipment. The black resin countertops shined softly. Evening light reflected in the stainless steel sinks. The trees that lined the Everal River were still, and the darkening sky was clear.

That day in Watkins Glen, I thought, is like the moon: I don’t think of it for days or weeks, but there it is again, quiet, distant, on its way somewhere. It hangs in a tree at night, suddenly it’s in a window, it looks out from behind a gray cloudbank. It shines as a frail crescent in the blue afternoon sky as if someone cut the firmament with a surgical knife and a tiny curved wound has opened, revealing sallow flesh.

What kind of memory is it, I wondered, this picture of the sky on an ordinary day in a place so long gone I hardly remember it? Memories are supposed to be of something. A sled named Rosebud, a madeleine. A first kiss, a broken bone. This memory isn’t about anything as far as I can tell. I was waiting. The sky was steady, white and blank. I can’t doubt it happened, but I can’t stop wondering if I’m remembering it right.

It’s strange I can’t recall anything around that moment. The day before, for instance. I must have planned to climb the pine tree. I’d have called John. I must have gathered rope and nails to build the platform.

And the days after: where did they go? Surely we boasted about our bravery. Inevitably, we climbed up again. And the rest of that year? And for that matter what year was it, even approximately what year? When I scan the blank calendar of my childhood, it is terrifying. Entire years are lost. I can’t remember much of anything from elementary school. A stretch of sidewalk on the way to school, with a large bright bird standing in my way—a Flicker, eating Pavement ants. A battered wooden cabinet in a classroom, with a shelf of fruit jars holding colored pencils. A girl who laughed when she saw what Sam was drawing on his desk, which was a man with a knife through his head. A music teacher who cried because a student with a shock of red hair told her she was old fashioned. Mostly the faces and voices are blurred, or the rooms are empty. Incompletely imagined. As if I spent my childhood in a hospital dreaming I was a healthy child. Or, really, as if I spent it watching the lake from the sloping field, or the pond from the back yard, or the sky from under the mulberry, or just wandering in the woods, searching leaf litter for mushrooms.

It’s uncanny to have forgotten so much. It’s like those science fiction movies where people’s memories are erased. They no longer recall their families, so they end up living fake lives with people they believe they love. The reprogramming fails and they get flashes of their real lives. The scenes from their past become more intense until all at once they remember everything, including the location of the secret laboratory where they were reprogrammed, and even the chair with restraining straps and the helmet bristling with wires. They break into the lab, blow it up, and go find their real families who have been living beyond the enormous city walls in an improbable agrarian society where people use a lot of candles and eat out of wooden bowls.

That’s science fiction, and it’s fun because it helps us forget that we naturally forget our past, without ever being fitted with special helmets, and without noticing exactly when we forget it or how much we have lost. It would be great if we could miraculously recover our lost memories with sophisticated technology or detective work, like in Inception or Total Recall or Spellbound or Dark City or Minority Report or Mulholland Drive or The Wolverine or Eternal Sunshine of the Spotless Mind or the Bourne movies or The Manchurian Candidate or Paycheck or Vanilla Sky or Edge of Tomorrow or Unknown or the Matrix movies or any of those films about people who are tricked into leading lives that aren’t their own. But that is not how memory works. It can’t be replaced. Memory is like youth: it sneaks away from you, little by little, leaving you weaker and less certain. No one steals it from you, you lose it all by yourself.

Perhaps I did experience a traumatic event, maybe there’s an absence in my memory where something horrible once was. It’s unpleasant to contemplate but it’s not impossible little Sam was abused. They say that in cases like that people dissociate, their minds protect them by erasing unseeable scenes. My my case there would have been a lot of erasing, because I have almost nothing left. A couple of empty landscapes, the lake, the pond. None of us can know this kind of thing for sure. All I can say is that those last remaining scenes from my childhood don’t feel traumatic, they don’t make me anxious or depressed. They are entrancing. I can think of them anytime, and the only penalty I pay is a lingering uncertainty about what might be outside the frame. It doesn’t feel like those movies where the traumatic event comes slowly to the surface like a body pulled from a swamp, as in Ordinary People or Prince of Tides or Mysterious Skin or Sleepers or Spellbound or Blue Ruin or The White Ribbon or The Long Kiss Goodnight or The Long Wait or Monster or Metamorfoza or Precious or Fearless or The Girl Next Door or The Machinist.

Hollywood also loves those rare cases of divided personalities, where people lead two or more separate lives, and they try to stay in one life, but the other ones keep interrupting, and finally they realize there’s something terribly wrong with them, but lucklily they have a brilliant analyst who explains everything, like in The Three Faces of Eve or Split or Sybil or Primal Fear or Frankie and Alice or Psycho or Fight Club or Peeping Tom or Raising Cain or Identity or Waking Madison or those other movies where the characters snap back and forth between identities. Those movies are meant to be disturbing but they’re actually comforting in a certain way, because it would be simple if our minds were like houses divided into different rooms, the Living Room of everyday life, the Bedroom of romance, the Attic and Basement of horror.

That leaves options that are more common and also scarier. Anyone can develop a deteriorating condition like dementia or Alzheimer’s and not really know it, at least until they forget the names of the people they love. It’s hard to be sure how my memory is doing, but at least I’m not losing recent memories like the people in Still Alice or A Song for Martin or The Savages or The Notebook or The Leisure Seeker or The Father or The End of Amy or Aurora Borealis or Falling or Firefly Dreams or Away from Her or Iris. I have nearly forgotten my childhood, but the rest of me is intact.

That afternoon in the back yard is stamped with certainty. The sky was blank. The air was thin. The kind of day where you feel you have to breathe deeply to get enough oxygen. Heaven was nearby. A wind roared in the treetops. The clouds had touches of gray, signs the good weather wouldn’t last.

It was as if the soft yellow eyes of flowers and the beaded eyes of spiders and the swollen eyes of worms were watching little Sam, as if they all knew, they all whispered: This is it, your moment of perfect happiness, from this minute onward your life will lose intensity, it’ll gray over, you’ll stray, you’ll go and live in forgettable cities (like Guelph), you’ll walk to work under indifferent skies, your eyes will no longer reflect the flash of a passing bee, your sight will cloud over, you’ll spend your time looking into yourself (like you are now), or out the window (like you are now), you’ll become muddled, you won’t feel much of anything when people you supposedly love give up on you, so Sam, now is the moment, right now, you should pay attention, but no, you aren’t listening, you’re playing like the boy you are, can’t you see that this fleeting scene isn’t just part of your life, it is the sharp spark at the center of your life, it is you at your best and there is no second chance and no going back, that’s what the rocking trees and wheeling birds and whirring insects were saying to me that afternoon, but I didn’t realize it, there’s no way I could have known it then, how could I have, that’s what’s so cruel about it: I lived those minutes without realizing I was happy, and now they are gone. What can I do with that memory? How can I measure my life, how can I understand my sleepy days?

Sam’s plan that day was to work on his greatest achievement, the platform he and John were going to put high up in the tallest pine in the forest. Eventually John got tired of arguing with Sam’s mother, and he came out into the yard with the things he’d gathered for their adventure. I remember what he had. He handed little Sam a duffel bag loaded with planks and lengths of rope from his parents’ garage. I remember that: his parents’ garage. He also had a backpack with nails, a hammer, and more rope. Or he probably did, or he must have, or he actually did. I’ve recalled it too many times.

If I am honest, I’m not absolutely sure that Sam and John went up to the pine that day. They might have gone on a different day, even a different summer. There’s no way to be sure, but I hope it doesn’t matter, because the two memories go together so well. Whatever day it was, whatever summer, Sam shrugged the bag up over his shoulder. It was unexpectedly heavy, and he hoped he’d be able to keep up. That is clearly true, because it is just the sort of thing children care about and remember. The two of them set off, up the yard and away from the house. They walked past the cobwebbed wooden tool shed and Sam’s mother’s rusted green and yellow John Deere mower. They pushed their way through brambles and honeysuckle into swampy woods where the stink of muck and skunk cabbage overwhelmed the grassy scents of the yard. Sam’s bare feet sank into the mud. I don’t remember that for sure, but I was always barefoot in those years, and the land was wet. The swamp birds were shrill and chattery, because they always are. Sam’s bag probably got snared in a tangle of berry bushes, because there were a lot of them up there. John went ahead, pushing through the thickets. A pliant stalk of new growth whipped back, snapping Sam in the face, probably, because that always happened when he walked in those woods.

Up they went into the open forest where the ground was dry and covered in pine needles. Sam’s muddy feet must have acquired pine needle soles, but I can’t be sure, because one of the conditions for going barefoot, if you’re seven years old, or even if you’re ten or twelve, is not noticing what happens to your feet, so I have no memory of what my feet looked like that day. On other days, yes, I remember cleaning caked mud off my feet.

In the pine woods the trees were older than Sam’s father’s grandfather, so his father had said, and even forty years later, sitting at a window in my mudless treeless birdless apartment here in Guelph, I wonder at anything that old. Little Sam threw the duffel bag down at the base of the enormous pine. The tree’s corrugated black bark was festooned with amber wounds. I don’t remember that, exactly, but it feels right, because most old pine trees have those scars. Little Sam may have scraped the caked mud off his feet, because he would have had to in order to climb the ladder. John sat next to him, most likely, because I remember Sam sitting next to John on many undefinable occasions. There was about ten feet of smooth forest floor around the base of the tree. Bushes obscured a deeper view into the woods, I think. Sprays of deciduous leaves and feathered pine needles obscured much of the sky. Inevitably, because that’s how those woods were. Sam looked up at the old pine: it vanished into a lattice of branches and pine needles. Or maybe he could see to the top, but not clearly.

The week before, they had nailed some planks to the trunk to make a ladder to the lowest branch. That afternoon was the big moment, when they’d climb the tree, all the way to the top, and nail down a platform to make a secret crow’s nest. John spilled out the contents of his backpack. He must have chosen a short plank, the hammer, and some nails, and put them back in for the climb. Sam put on the backpack. He must have, because how else could he have carried that plank all the way up the tree?

Sam went first. The nails in the plank ladder squealed as he climbed, and one of the planks swiveled when he grabbed it. At least I’d like to think so, because dangerous journeys always have those anxious moments when you think the whole thing won’t work, but the brief scare just makes you more resolved. He made it up the ladder and sat on the lowest branch of the old pine. It seemed a lot higher than it had from the ground, not because I remember it, but because that’s the way it is with heights.

The next ten minutes are another of those precious memories. I watch him now, in my mind’s eye, as little Sam begins his amazing climb.

The first few branches are very far apart. He has to stand on the lowest branch to reach the next one. He pulls himself up, curling his body around the second branch, hoisting himself by force. It’s like climbing a giant ladder in a dream. He tries not to think about coming back down, because then he’ll have to hang from each branch to drop down to the one below. Higher up, the branches come closer together and the climbing gets easier, but it’s scarier on account of the height. John follows. Sam is trembling a little, but he’s afraid to stop. They lose sight of the forest floor. As the trunk thins there are more branches, and they have to snake around them. Still there’s no view: they are in leaves like pilots in a cloud. Then at last the view appears, and it is wonderful. There is the town of Watkins Glen and the lake. And over there is Franklin, twenty miles away, and other hills they don’t recognize. They gaze down at the tops of nearby trees. Sam points out the roof of his mother’s house! The trunk sways back and forth.

Up above them is the very top of the tree, not more than twenty feet away. They wonder if their combined weight will snap the trunk. Adrenalin pushes them on, and they come to the last branches big enough to hold their little platform. Near its top the tree divides in two, forming a V. The double trunks are thin like saplings. Sam climbs a foot more, until the split is at shoulder height. He pulls the plank from his backpack, places it across the gap and nails it down, holding the nails in his mouth and hugging the trunk with one arm. He carefully pulls himself up over the edge of the plank and squats down on it, arms around the twin trunks, swaying just like people in crow’s nests in movies. Very slowly he stands up. He is at the top of the world. Another perfect moment. There is no ground beneath him and nothing but blue distance in his eyes. He feels the leisurely swaying of the tree, as if he’s on a raft in a milling green ocean. If he slipped he wouldn’t fall and die: he’d sink softly and impossibly down, like a drowned leaf settling into the soft matter at the bottom of a pond. He stares across the ocean of green waves and beyond them to bluish hills. And there is the lake, warming itself in the afternoon sun. The wind comes from far away. When the family drove out to Franklin to look for mushrooms, it took an hour or more. Wild turkeys lived there, and feral dogs. Poor farmers left rusted tractors in their yards. Now there it was, chalky in the distance.

Each time the tree sways the plank squeaks. The wind whirs, sorting madly through the pine needles, searching for something to grasp. Sam yells, but there is no answer. John must have gone down, because he isn’t there anymore. But that can’t be right, because he’d want his turn.

An ambulance came down Lorck, and another memory intruded.

Sam was alone in the treetop. He’d climbed there by himself. John, Mark, and Billy had come along, but they’d stayed down on the ground. Sam had gone for broke, done the unthinkable brave thing. He’d become an invisible hero, disappeared into the treetops. His friends were looking up into the tree, waiting for a hammer or a plank, or worse, to come plummeting down. That felt more like it, more accurate: if John had climbed the big pine with him, they would have had to take turns on the platform, and John would have been part of the memory. Surely I can’t have erased John from the memory of that day. So I must have climbed alone. But why would the others have stayed below? Mark, in particular, was full of daring. He was reckless, more than Sam or John. If Mark had been there, he would have been first to the top. He would have built the platform, not Sam.

Did I really build that platform? Or did I just climb up after someone else had built it? Maybe I wished I’d done it, so I told myself a story, and over the years that story was elaborated with details like creaking planks and nails I’d held in my mouth.

But on the other hand it’s possible I have forgotten just because I was brave back then and I climbed without thinking, automatically, as kids can do. Little Sam had certainly done dangerous things, like diving off cliffs and exploring the abandoned cement factory by the lake. Maybe he just hadn’t noticed the details of his accomplishment, so he’d had to invent them later. That sounded right, or at least better.

I could find out. John, Mark, and Billy would remember. Mark would be the one to ask, but I haven’t seen him in thirty years. I don’t even remember his last name, or the business he went into. The last time I spoke to John was also thirty years ago, the year I left for college. His family moved to the south, and he went to college somewhere down there. Maybe I could write to Billy. A couple of years ago I got an email from him, out of the blue. At first we were delighted to be reconnected, but Billy was full of stories I didn’t remember. “Wasn’t it great,” he wrote, “when we went on that trip to Los Angeles with the high school students? Wasn’t it amazing when we went out that Halloween and met that guy with the paint gun? I was so grateful that you became my friend when my family first moved to Watkins Glen from Hungary. Did you know you were the first to invite our family to dinner?” I had to tell him I didn’t remember those things. I could hardly remember anything we’d done together. He sent me an antique postcard of Seneca Lake. It showed a house and some small cabins for visitors.

“Remember this?” he wrote, “this is the picture you loved so much. It shows the place where our house was later built.”

He had drawn a rectangle on the photo and labeled it HERE. “You used to say it was so cool I had this photo of the place my parents’ house was, before it was even built there.” I had to tell him I didn’t remember the photo, or even the house his parents had built. Billy had a mind full of memories, and I had none to give in return. I ended up writing, “Sorry, I know I should remember these things, but I just don’t.” “I understand,” he replied, “you have pushed childish memories out of your mind to make room for adult concerns.” After that he didn’t write again.

What about the pine tree itself? Could it still be there, almost forty years later? I could drive down to Watkins Glen and have a look.

The last time I was near that part of the forest was back when my mother was still alive. I’d spent a day helping Paolo, our uphill neighbor, find the edge of his property. He owned the field just below the pine woods. He was ninety-one years old, he said, and looking forward to ninety-nine, which he said would be a truly impressive age. We set out looking for metal pipes with red plastic ribbons that marked the boundary between his land and my mother’s land. After a while we found a few. The next one, he said, was not a pipe but an elm stump. Did I remember it? No, I said. Where had it been? Paolo couldn’t recall exactly, but there should be a big stump back in the thickets. We searched, or rather I did, while Paolo stood in his field watching. He said the elm had been the biggest in the area back when my parents sold the property to him. One of those great elms before the Dutch elm disease, Paolo told me. Its branches made arcs and dipped down all the way to the ground.

At least on that day Paolo didn’t determine where his property ended. I hadn’t thought of the pine tree with my platform at the top. If I had, I could have just looked up the hill, and I might have seen it there, plank at the top, waiting for someone to climb it again after so many years. I try to picture the hill: maybe I glimpsed it and it didn’t register. But I see only a red plastic ribbon in the thicket. But can you stand inside a memory and look out? It’s like sitting with the characters in a novel and looking around to what they might have missed. What’s beyond the moors in *Wuthering Heights*? The next year when I visited my mother I saw Paolo on someone’s arm, walking down his driveway. I came up and shook his hand, and he said, I know you. I told his nurse my name in case he remembered later. I don’t think she caught it. The year after that, he was gone and the house was shut.

I have to admit it is possible Sam never made it to the top of the tree. Any of his friends could have gone up and set the platform in place. If they did, that would explain why my memory wavers, because the climb would be a story I made up in order to forget my own lack of courage.

Now another memory comes back to me: I did climb the tree, and then I climbed again the following spring and discovered the platform had vanished, torn down in a winter storm or pried loose by the swaying of the V-shaped trunks. I suddenly remember the treetop without the plank, and my disappointment. Yet that memory, too, seems threadbare. Wouldn’t Sam have searched around the base of the tree for the fallen plank? Wouldn’t he have tried to replace it? I think I remember Sam found a nail still stuck in the pine, curved where the wind had wrenched the plank free. But that seems too neat. He had undoubtedly been worried about whether the plank would stay in place, and so he’d imagined how it might have been pulled free of its nails. Probably he’d pictured the plank shuddering in a snowstorm, the nails loosening… perhaps he’d been in bed one night the winter after the platform was built, watching a storm from his bedroom. The window would’ve rattled and trees in the back yard would’ve tossed back and forth in the moonlight. He’d pictured the platform ripping from its moorings, hanging, swinging wildl, and dropping away.

Maybe he never climbed the tree to find the platform. As the years passed, his concern turned into a memory about how the platform had fallen. The picture he’d formed in his mind as he looked out the window at the dark mass of woods became a picture of his climb the following spring, and his discovery of the exact scene he’d imagined: two thin trunks, a bent nail still in place.

So I didn’t climb up again and discover the platform had vanished, but the false memory is a kind of proof that I had in fact been up the tree and nailed the plank in place, or at least someone had, because otherwise I wouldn’t have worried whether the platform would last the winter. In the end it doesn’t matter if I went back the following spring and climbed the tree again: all that counts is I thought I had, because that proves there had once been a platform, and so it is possible, and even likely, that Sam put the platform up there to begin with.

Ah, but it is so complicated. Some unidentifiable part of my mind may have invented the story about returning to the treetop in order to make some other part of me feel better about not ever having been to the top at all. The memory of the second climb is dream logic, bad logic. I fabricated it so I could tell myself what I had just thought—that the invented memory of the second climb means that I must have put up that plank after all.

Or worse: I may have climbed the tree and set up the platform, but then, revisiting it in dreams and daydreams, I may have become unsure, and as the memory of the original event dissipated, I might have worried that I may never have climbed the tree, and so I invented another memory to make myself feel better, a lie to cover the amnesia. That would have worked, except that another part of me had suspicions about my own strategy for convincing myself I wasn’t losing my memories, because it is curiously appropriate for a person who is anxious about losing his memories to have a dream in which the platform is torn away—torn, that is, like a memory that’s lost.

This is what seems truest to me now: the entire idea that I went back the next spring is a fabrication intended (by some weird part of my mind that was trying, in its addled way, to help out) to make me (that is, some other part of my mind, incapable of scheming to help itself, childishly attached to the idea that I’d been to the top of that tree) feel better about something I have in all probability never done. How weird is it, mulling over my memories and realizing that I myself, whatever that means, have concocted those memories, either because the events never happened, or because they were too painful to revisit? Why do I have to struggle against myself to find out what took place in my own life? What kind of sense does it make to imagine some part of me was trying to help another part, and that I didn’t know it, or didn’t pay attention, and then for a while the part needing help was content, but now it isn’t, because a third part has appeared and made a mess of everything?

Where exactly was I when those other parts of me were plotting?

It’s as if my memory of that pine tree is a sleeping baby, watched over by another baby, watched over by another baby, each baby bigger than the one before it, looming beneficently over the smaller ones. But the babies keep falling asleep, and when they wake up they forget what they were doing, as babies do, and as people do when they make metaphors that are too complicated to keep track of, except that I have a good reason to be confused, because I am becoming aware of the fact that although there may once have been one I, who slept like a baby inside his perfect childhood dream, now there are many, some losing track of others, still others busy inventing cover stories or industriously but hopelessly trying to understand how anything so devious and bewildering and really so disturbing can possibly have grown out of that harmless simple boy standing on a plank high up in his imagination. Maybe this is something dreams do for us. Some parts of my mind don’t sleep. They wait until I am rapt in my dream of bravely climbing the pine tree. They gather around the dream, watching to see how it goes. Of course it goes badly, because I’m always doubting it. The dream turns dark. The platform groans and splits. At that point one part of my mind says to another, “That can’t be good, we need to fix that, let’s repair the memory,” and the other says, “Okay, but please be quiet, don’t wake him, just add a detail about John climbing up after him. Just slip John in when he’s not looking.” And a third part says, “Shh! You can’t do that while he’s dreaming about the tree. You have to wait until the dream has Rosie in it, and then you can change the story when he’s not looking.” Then a fourth part says, “This whole operation will never work, because I actually am Samuel, and when he wakes up I’m just going to go and tell him, and he’ll realize we’re making it all up,” and the second part says, “Will you all please be quiet, he’ll be really upset if he realizes what we’re doing, just mention Rosie, slip in the detail about John, and he’ll never notice.” And violà, John was there. It all happened while the most infantile part of myself, the one who needs to know he was once a hero, had a sweet but troubling dream.

It tuns out it’s very difficult to imagine some parts of yourself staying awake while you sleep, or at least it’s not possible to imagine except as a joke, a parody of something that is both mysterious and creepy, or even horrible. If it wasn’t so clear that parts of me have been fooling other parts for so long, I wouldn’t have believed such a thing could happen. It must be common, except that no one seems to notice it, because hardly anyone doubts their memories for more than a minute at a time.

It’s even more difficult to imagine those revisions and lies happening while I’m awake. Does my mind repair my memories while I’m distracted by the steam in my morning shower? Or maybe it all takes place in the dark intervals between dreams, when the theater of the mind appears to be empty.

Little Sam must have built that platform. He must have, despite the fact that the moment is so hard to picture, smeared as it is by years of anxious daydreams and inventions, each overwriting the ones before: he must have, because otherwise both my pleasure and my anxieties about my past are empty. People think memories are lovely, because they are confected by a sentimental part of the mind. Yet a cherished memory is an overpainted memory, like a painting that the artist can’t leave alone. He sneaks into the museum with a paint box in order to add ill-advised details to a painting that’s already finished and framed. He has someone distract the guard while adds an almond flower here, a rainbow there, a couple of rabbits, a dove, more flowers, and a herd of unicorns, until the painting is completely ruined.

Or a treasured memory is like an old coin buffed by generations of greasy fingers until the face on it is blurred like butter, and all that’s left is a blank disk with no picture, no country, no date. Treasuring, cherishing: those are words for ruining. Memories are complicated lies, I’ve decided, involving parts of the mind that your conscious self doesn’t want to know about. Living is turning against yourself, over and over again, until there is nothing left.

My tree platform was a lie one part of me told another in an addled attempt to keep the whole of me, whatever that is, happy, whatever that is. The only trees that I know are real are the willows I see below my apartment, down by the Everal River. I can’t hear them, but I imagine them creaking and clacking against each other in the storm.

Little Sam was happy without memories, I think. Children are that way. Fina was certainly cheery as a little girl, before she could remember much about her own life. When she was three, Adela and I reminded her of a trip we’d taken to Keuka Lake earlier in the summer. “Remember?” Adela asked. Fina looked up from her stuffed owl and said, “Yes,” and then she added, “Red candy,” meaning a Gummy Bear she’d had. I asked if she remembered what we’d done afterward. She stared blankly and her little face went slightly off, like I had hurt her by asking. She went back to her owl. After a minute, I asked again, hoping she’d remember that we went on a waterslide. Did she? “No,” she said, carelessly, turning the owl upside down and shaking it. Then she was happy again, not knowing she’d forgotten.

— In a few years, I said to Adela, she’ll start remembering more. She’ll be full of memories, and she’ll spend her time musing and reflecting on her life and she’ll never be happy again.

— Jesus, Samuel, was all Adela said.

I have looked too long, I’ve soiled the few images I have left, blackened them just by thinking about them. What is left is fiction.

I can picture balancing up there on the narrow plank. As Sam would have had to, in order to see the lake and the little white lighthouse.

I can imagine sitting on the board, holding tight to the thin trunks on either side, watching the burning fields in autumn.

I can imagine standing on the platform in a rain shower. A sudden gust buffets the tree: I slip, and I fall gracefully, dreamily, down through the many branches, one after another, grasping each lightly as I pass. How easily I fall.

I can picture a midwinter day, eighty years in the future, long after my own death. The old tree is dead but still standing. It had never been scarred by nails or climbed by boys. The winds tear at its bark, making the loose pieces shiver.

I can imagine the tree even further in the future, when it has been dead for some years. Its bark is gone, the smaller branches snapped off. It is a smooth white ghost in the green summer. Suddenly and for no visible reason, there is an ear-splitting crack and it crashes into the thickets. It lies in great splintered pieces. The smell of torn bushes and vines lingers in the air.

I can picture another year, even more distant. The trunk has settled into the swampy ground. Its wood is soft. The tree is subsiding into the earth.

Maybe it’s all fiction. Sam and his friends were only kids, after all, and they dreamt of climbing that tree, but in the end they never dared. They grew up and moved away. I won’t ask Billy, because what if he says, I don’t know what tree you’re talking about, we never climbed trees in your woods.

Like any beautiful story, or for that matter any dream, mine is made of parts taken from different places and arranged in a new order. Little Sam lived in different pieces, which he presented to me like a gift. As I grew older my need for those memories increased, and that’s when the trouble began. I wanted to make the memories whole, rearrange the pieces so they made sense. Without my noticing, some part of me laid out the pieces of little Sam’s life like a jigsaw puzzle and tried to fit them together. The next time I thought of Watkins Glen, the memory seemed suddenly fresh. Inconspicuous new details, like a wooden shed or a John Deere mower, had been artfully added to the scene, tipped in so I wouldn’t snap out of my reverie and say, Wait, that’s not right, our shed was metal. That mower was Paolo’s. I must have been embellishing and curating my memories throughout my childhood. I must have started lying to myself very early on, maybe from the first moment it occurred to me to climb the pine tree. I must have known, obscurely, as children know things: I will always want to live in that afternoon, that I will always cling to that platform as if it is a life raft, even if it happened in another lifetime, to a person I no longer know.

I’ve tried to think this out like my mother would have. The mind, she would’ve said, is the brain. The hippocampus takes care of long-term memories. Clearly mine is weak, possibly even debilitated. The cerebral cortex must have stepped in and confected fresh long-term memories. But now there is doubt about the new memories, so the temporal lobe gets involved, because it is good at logic. It looks into the matter of the long-term memories and discovers evidence of tampering. Who made those memories, exactly? Accusations fly. The temporal lobe accuses the cerebral cortex of a cover-up, but the cortex maintains it has no memory of such a thing. It reminds the other parts of the brain that in fact it isn’t in charge of memories. It directs the inquiry back to the prefrontal cortex, which, as the cerebral cortex properly points out, is responsible for short-term memories. “One moment,” the temporal lobe says, or thinks, “Is it true that someone’s been tampering with the hippocampus?” “Yes,” the prefrontal cortex says nervously, “But I can’t tell you who.” “Why not!” The temporal lobe thunders, but the prefrontal lobe won’t speak. Someone has gotten to it.

It is a good thing I don’t know any more about brain science. Even if I could figure out what in the world has happened to my memories I wouldn’t be able to shake the feeling that it’s unhealthy to be thinking about these things at all. So I drift on the changeable sea of my unstable memories, pitching in the soft leafy water. My simple plank raft finds its original tree and fastens onto it, the splashing waves become tossing branches, and I am back in the forest in Watkins Glen, where once I lived what I still want to count as my life.

If you put your hand into a box of jigsaw puzzle pieces and swirl them around, you erase one chaos and reveal another. It’s a mess, but there’s the promise that the whole thing will come together.

When she was not calculating comet orbits or classifying mushrooms, my mother spent her time at two large folding tables she’d pushed together, working on jigsaw puzzles. When I was young I liked looking at the disassembled puzzles. I felt that each piece was a small defective picture. They were forests and trees, because that’s what she liked, scenes of home. One piece might show feathery branches high up against the sky. Or a scrawny sapling, weak and prone to snapping. Or flocks of crescent leaves. Things I knew.

I loved those small curving windows on the word. The photos were blurry, and if you looked closely enough, you could see the printing dots. It was comforting to think that really, the world is just a picture, or many fragments of pictures. There weren’t any sounds or smells. Nothing shifted, or became clearer.

When my mother finished a puzzle we clapped, because that’s what she expected. I disliked the pictures during the few minutes when she admired them. The ordinary-looking landscapes were never quite like the place we lived. There was usually a big maple tree with rose-colored leaves, a picturesque barn, a tractor, or a pretty church. For my mother, close was good enough. We knew knew the completed pictures weren’t really of any interest, and soon she broke them up and put them back in the box. All that really mattered was how efficiently she’d assembled the landscape.

I was a child, so I didn’t realize what it meant that my mother was perpetually assembling and destroying images of her life, why she needed to demonstrate to herself that she could do it quickly and not mind tearing it apart. I liked the pieces by themselves. If I’d known how to find the words, I would have said that each piece is a small puzzle, a perfect one. By itself, each is a mystery that can never be solved. Like a glimpse into a scene where only a part is visible. A view through some distant leaves to a white sky.

My memory of the sky over the muddy pond is like a single jigsaw puzzle piece. If I think about it, I should be able to put it together with some other pieces, reconstruct the day, the year. I must have been eight or ten years old. But I also knew John in high school, so I could have been eleven or twelve. Or maybe as young as six or seven, because Martha let us all play by ourselves from an early age. It is odd that I can’t pin down the year. In a normal memory, isn’t it usually possible to remember what year it was? At least I should be able to remember what I was wearing that day, but I can’t, and in fact I can’t remember any clothes little Sam wore in those years except for an Indian-bead belt and an aqua and green checked shirt. What did I look like back then? I can remember some of my clothes from high school, because that’s when I became conscious of how I appeared, how I used to wear muddy pants to school because I spent so much time walking in fields and woods. On that day I was barefoot. I know that because my toes were cold—but that’s not a memory, it’s a deduction. It’s as if I didn’t have a body that day. Maybe that’s not so unusual. After all, I was only a child, and my mother dressed me. Except that she didn’t, not if I was seven. If I was older I would have been choosing my own clothes, but I have no memory of that either. Don’t children start thinking about how they look when they’re four or five? How many years did I go without having a body? Alec isn’t in the memory, but he is six years older than me, so he may not have wanted to go climb that tree. If I was older, say in high school, Alec would have been off at college. But Tee isn’t part of the memory either, and that is unlikely, because he was always around the house somewhere. When I was seven, Tee was five, an age when little brothers come running after their older brothers. Even if I was twelve Tee would have been around. I clearly recall watching my mother argue with John. She was sitting, he was pacing. She was smoking. She was difficult, like a shaking box of shattered glass, that’s what I always say to myself. But even a twelve-year-old probably wouldn’t think up a figure of speech like that. I must have added that later. It’s an embellishment, which I inserted into my own memory without realizing it. Even if the entire scene is wrong, and there never was an expedition to the pine tree, there’s still the pale look of the sky. That was my experience, it always has been. It is a safe memory because it is about nothing. That sky is the one thing my unreliable mind can’t take from me. A memory of nothing is the only true memory. Almost nothing remains from little Sam’s life, and that is as it should be, because back then what he loved was nothing.1

Now I see my mother leaning over the folding tables, wearing her scowl, working on an enormous jigsaw puzzle of a forest. Ten thousand poorly printed pieces showing a forest. It was after my father died. She said he was proud he’d been able to find that puzzle for her. Ten thousand: I remember the number clearly, because she kept repeating it. When he gave her the forest puzzle, she said, the two of them stood around the table looking at the picture of the forest and the enormous open box full of pieces.

— He said I’d never finish it, she said.

— When you start a puzzle, she told me, you begin by spilling the pieces out. Then you have to turn them picture side up. Next, you arrange them in piles: edge pieces, ones with sky, brighter colors. Dark pieces in one pile, pieces with trunks and branches in another, brown leaves here, yellowish ones there. Then you line them up in columns, so they can all be seen at once.

Tee and I were shown how to take a piece and move it along a column to see where it might fit. I remember that because it was boring. Martha worked quickly and minimized disorder. For her it was an exercise in logic. The pieces were small, they all showed leaves, and they seemed endless. For the first few days she had only a couple of matches.

Over the years she had become addicted in jigsaw puzzles. She told me she’d gone through the popular ones when I was very young. Later on, my father had to search for the largest and rarest puzzles. She’d done a puzzle of a Jackson Pollock painting, another called Little Red Riding Hood’s Red Hood, and one called A Gallery Portrait that turned out to be a wall-sized painting of a room full of paintings. That one took her most of a year.

I looked at the enormous puzzle of the forest and had the odd feeling that my mother was going to assemble our world. I recognized trees in our forest. Branches I knew, ones I’d swung from or climbed onto. An old elm with a diseased trunk, like one in our back yard. Dense branches that twined like the mulberry. She was working on the very landscape in which we lived, putting together our place in the world. Making it perfect, as fast as she could, and when she finished, she would tear it apart right away and put it back in the box, and then the box would go onto the pile of moldering puzzles in the garage that she had solved and set aside.

Sam felt uneasy helping his mother. He wanted her to give up, so the puzzle, and the world, could stay in pieces.

She’d take a piece between her thumb and index finger and hold it against the rows of other pieces, comparing, one by one, a fraction of a second for each, like a policewoman walking along a line of suspect. I remember the feeling of relief when she failed, and took up another piece.

I no longer remember how many months it took her, but I recall the day she finished it. The forest was like an image of the outside world projected on the table, a magical scene in which all the trees I knew in the yard, in the forest, on the swampy hillside with the tall pine, were gathered in silent conference. The scene was interrupted by the wavy lines of the puzzle pieces. It was actually perfect, mysterious and inviting. The printer’s dots on the pieces shifted, as if there was air inside the puzzle. The whole scene was like the real world but softer and quieter. I could fall into if only I could only see it more clearly.

Then she began dismantling the puzzle, with just as much energy and efficiency as she’d put into assembling it. She lifted entire strips of pieces and pulled them apart. She swept piles of pieces into the box with her forearm, and in a few minutes the tables were empty.

Little Sam saw how anxious his mother was when she worked, how quickly she’d assembled the puzzle, as if it was an unpleasant duty, how little pleasure there was in the completed image, how frantically she disassembled the world she’d made and stored it out of sight. He watched as his mother demonstrated, again and again, her proficiency at composing the woods, the forests, and the fields. She knew them perfectly even though when she went outside she never looked up from the ground, never remarked on anything except mushrooms.

After the ten thousand piece puzzle there were many others. Again and again she assembled little Sam’s world in front of his eyes, let the pictures rest for just a few minutes, and then tore them up and down their seams, broke the pieces apart, and tossed them into the box. Box after box went out to the garage.

Something deep in us looks at a memory the way we look at a baby. Even if it’s not ours we want to keep it safe. Even if we don’t feel any particular attraction, we’d like it to be happy.

Memories are sensitive. You have to be careful, and play along. If a little child is sick, you lie to it.

“You’re fine,” you say. “Everything’s fine.” You wipe away its tears. You say, “You’re fine, nothing is wrong.”

If an old person is ill, it’s the same: you lie. You say, “You look so much better today,” even if there’s something terribly wrong with them.

Who was this child, the one I once was?

In these pages it is a weak child, a child who doesn’t speak, who watches. Who would rather look at printed pictures than at its mother. It is a child who doesn’t know what he looks like. A child who doesn’t even know his age. Who doesn’t re­mem­ber his bro­the­rs. A child who wants to have no mind. Who does not want to be part of the world. It is a child who wants to dis­app­ear, hopes the world will fall apart.

I must have felt this intensely and silently, the way children sense things, and it has waited unnoticed in my mind for forty years. I must have wanted the world to be in pieces. I needed it never to be finished, never to form a picture, never to make sense, and so I fell in love with pieces and glimpses of things, even if they have no meaning: a feeling so strange, so far from normal, that I have hidden it away from myself for half a lifetime.2

**<Chapter 17 A High Building in Chișinău>**

At the Yellow Hat Catherine was in a voluble mood.

— I’ll tell you a story, she said, and after you’ve heard it, you’ll say I am awful, and then later, when it’s too late, you’ll want to thank me. Once, I was in Moldova, stuck in a hotel in Chișinău, really a kind of rural inn, you don’t see those here, everything done in dark wood. The wood was shiny from generations of cigars and cooking oil fumes. I was stuck there waiting for a visa to Belarus because I had been turned back at the Romanian border, but that is yet another story I am sure you don’t want to hear. Anyway I got to know a woman there, Axenia Butnaru. She was the owner’s wife. We got along so well, I really miss her. I should write her. That’s because I actually like some people. Also I love fried meats. If I had stayed any longer, I would have gotten fat. Do you mind?

She took my vanilla custard and put it next to her tuna sandwich.

— Did you ever realize that you can be happy anywhere, really? If a person lived a thousand lifetimes, she could have a thousand families, each one as wonderful as the last, each different, all of them arbitrary, none worth more than any other, like different days, one life cloudy, one bright, one pelting rain, one parched like a salt lake. A person who lived a thousand lifetimes could be happy, on average, reasonably happy, basically forever, because you can be content with nearly anyone even though people say we’re all individuals and the person we love is perfectly matched to us and no one else and it can take a lifetime to find that one unique person and without them we’d be lost and love is precious and fragile and rare, but how untrue that is, because I hardly knew Axenia and yet I liked her a lot. That old hotel in Chișinău was just the first one I tried. If I’d stayed in other hotels, I would have found people I liked in most of them. If I’d stayed longer, if I had decided to live in Moldova, I could easily have found someone to marry.

— It’s hard to imagine that. You’re very picky.

— Well, you wouldn’t know. Anyway Axenia told me her father had died from a stroke. Her mother was sad and angry all the time after her father died. Recently she had started to show the signs of dementia. One day back when Axenia’s mother was still okay, but also sad and angry, she gave Axenia a funny look at dinner and said, “You know I will never forgive him,” and Axenia asked her mother what she meant, and she said, “Axenia, your father was horrible. I don’t think there’s a good way to say this, but you need to know. He was having an affair with his secretary right in the office.”

— Oh.

— Axenia said, ‘When I heard that I fucking jumped through the roof. I said, “Mom, for god’s sake, what are you saying? Dad was unfaithful?’”

As she spoke Catherine rested her head in her hands, with the effect that her jaw stayed put and her head bobbed up and down.

— Axenia told me her mother said she’d kept it bottled up for years, but Axenia was old enough to know it now, and it was the truth anyway.

— That must have been something to hear.

Catherine was a good friend, the way a TV is. I could eat and listen.

— Tell me about it. Poor Axenia. But listen, there’s more. Her mother told Axenia it had gone on for nearly ten years. Her father had been unfaithful for ten years! Since before Axenia was even born. A real relationship, not just a fling. “It was horrible,” Axenia’s mother said to her. “Your father was a monster.” Axenia asked how she’d found out. “Oh I knew,” Axenia’s mother said. “Every day your father would come home from work and I could see it on his face.” Axenia told me at first she didn’t believe her mother. I wouldn’t have either. She asked her mother again. “People told me,” her mother said. “Many people, they saw your father together with this woman, on the street, shopping, in Malldova, in Zity Mall, in Velmart, in Fidesco, out strolling at the Eternity Monument, walking along Strada Emilian Galaicu-Păun, Varbara saw them in Kaufland, having lunch in Line Coffee on Tighina, at the Odeon on Eminescu, Varbara was actually sitting in the same theater with them! And not only that,” Axenia’s mother said, “Irina spotted them at dinner at Vatra Neamului. It never ended.” Still, Axenia told me she just couldn’t accept it. “Do you have proof?” she asked her mother. “I always knew,” her mother said, “but then one day I was cleaning out his desk, and I found pictures of that woman. That was it. That’s when I said to him, ‘We’ll stick together for the sake of Axenia, she’s our only child, we need to stay together, but as far as I am concerned you are dead. Literally dead.’”

— Awful.

— Right, but wait. This gets better.

— Hope so.

— I mean it. And you will see why you need to know this story. So this happened a couple of years ago, when Axenia’s mother was still okay. She had been forgetting things a little more than usual, but she was okay. But when she told Axenia those things about her father, all of a sudden, and in such detail, Axenia began to wonder. She asked her mother what happened when she had it out, when she shouted at her father. Her mother said something funny. She said, “Well, nothing happened. We had dinner. The next day we separated.” And Axenia said, “Oh,” because that sounded sad, and that was the end of it, but then she thought it was odd that her father didn’t try to defend himself. There was no argument? They just ate dinner in silence? Well, so Axenia wondered about it, but she decided her father must have had an affair. After all, her mother had photos and witnesses. But still her doubts wouldn’t go away. Axenia said, “The thing is my mother never explained what my father did after that evening. They separated, she told me that, but they were together when my father died. I was seven then, I remember it perfectly well.” She told her mother she remembered they were together at the time her father died. Her mother didn’t answer. It was as if after the evening when her mother confronted her father, he disappeared from her mind, like she had actually killed him by saying ‘You are literally dead.’ “You were together,” Axenia told her mother, “I remember it.” As Axenia’s mother’s dementia got worse, she talked more about Axenia’s father. One time her mother said to her, “I just couldn’t take all his cheating, and so I went up to the office, and there she was, that secretary, and I went around the desk and kicked her. Really hard, harder than I thought I would. Blood ran down her shin. I asked her in a very cool voice if Mr. Iuga was in, and if I might please have a word with him. That woman was yelping, hopping around on her ridiculous stiletto heels. She was squealing, ‘He’s not in, he’s not in, for god’s sake what’s your problem?’”

Catherine ate a spoonful of my custard.

— Axenia’s mother had no pity. “What should I have said?” she asked Axenia. “That I was sorry? I wasn’t sorry. I left the office before your father got back. That woman must have put two and two together, but your father and I never mentioned it.” When Axenia heard that story she felt sorry for her mother, she’d that horrible experience and it still haunted her after so many years.

— Your friend’s mother was dangerous woman, I said.

Catherine bit the point off one of the four triangles of her sandwich. I took my custard back. I was enjoying myself. It was like dinner and a movie in one, though I could feel a moral was impending.

— Like I said, Axenia’s mother had always forgotten little things, her keys, normal stuff, but then she also started forgetting her phone number and her address. She kept telling Axenia stories about her father, but they seemed less and less real. They were fantasies, Axenia said, she decided they must be fantasies. She told Axenia things that couldn’t have happened. She said, “He had pictures of that girl, and he put them in the frames on the mantle, where we used to have pictures of our wedding.” Impossible, right? Like a nightmare, right? She said, “I found bank checks with my name scratched out and that woman’s name written in.” Impossible, Axenia said, checks can’t be changed like that. After that her mother started telling these grisly stories of revenge, and at first Axenia was shocked, but then she was shocked in a different way because she saw they weren’t true. One time, Axenia told me, she and her mother were at a party talking to some women from the neighborhood, and one of them was saying how she was divorced, and another said she was twice married, and Axenia’s mother said, “I used to be married, but my husband was having an affair, and I found out about it.” One of the women said something like, “Oh, how horrible,” and then Axenia’s mother said, “Gosh, don’t worry about me, I went straight to his workshop—you know we had one of those woodworking setups in the garage—and I got a jab saw. You know what that is?” Axenia’s mother said to those women. “It’s long and straight, with a wicked serration and a sharp point. I marched on down to the tall office building where he worked, and came in, all innocent-like, and when I got to his office I walked right past that worthless woman, and then I turned around, and pulled out the saw, and ran it across her neck. Except that I sort of missed, and I hacked up her collarbone and the side of her neck. I never went to jail for that, but naturally, my husband divorced me. I haven’t seen him for years.” Those women were shocked, Axenia’s mother told her, but Axenia felt proud. Her mother had taken revenge!

— But wait, at that point Axenia’s father had been dead for some time, right?

— That’s the thing. Afterward Axenia asked her mother about the secretary, was she okay? Her mother didn’t know, but she guessed the secretary was fine. “I just disfigured her a litte,” she said. Axenia asked about the saw, what did you do with the saw? Her mother said she didn’t remember. Axenia asked about the police, didn’t someone in the office call the police, and her mother said, I guess so.

— Revenge fantasies, I said.

— Over and over. Another time her mother came into the living room, turned off the TV, and said, “Axenia, we have to talk. There’s something I have to tell you. I always said your father died from a stroke, but that isn’t true, I didn’t ever tell you what happened. He died in a car crash. It was caused by that woman he’d been seeing. He came home one evening, hours late as usual, and I slammed his dinner down in front of him, like I always did. That was my way of showing him I knew. ‘We’ll stick together for the sake of Axenia,’ I said, ‘she’s our only child, we need to stay together, but as far as I am concerned you are dead. Literally dead.’ He said, ‘Will you please stop that?’ and I said, ‘I’ll stop whenever you stop, honey,’ and he went into a rage and smashed his fist on the table, and all the plates and glasses jumped. He said, ‘I’m going out,’ and he drove off, and that was the last time anyone saw him alive.” Axenia’s mother said she stood there looking at the dinner. Everything had fallen right back into its proper place. You wouldn’t know anything had happened. Later it turned out he was driving two hundred kilometers an hour to see that woman, and he crashed. Can I finish your custard?

— It’s yours.

— So in the next few years, Axenia’s mother’s dementia got worse, and her stories got more delusional. One time her mother had a garden party. Most of the guests were elderly like she was, and they were talking about husbands and wives who had died or were ill. Axenia’s mother listened for a while, and then she said, “I was married, a long time ago. My husband actually fell off a building. You know that tall office building on Fîntînilor? The one that’s all green glass? He worked there. Well, actually he owned the company. My husband was a lawyer, and sometimes they had claims from dubious people, like maybe drug dealers. One time my husband represented a client who was suing his wife for divorce on the grounds of infidelity. My husband contracted a private investigator, like he often did, and the investigator discovered the man’s wife wasn’t unfaithful. The private investigator told my husband that his client’s wife wasn’t unfaithful.” That’s what Axenia’s mother told her friends at a garden party. Axenia said her mother told her, “My husband was maybe not the most perfect person in the world, but he tried to do his best. He believed in telling the truth and not deceiving people. So he told his client that his wife was faithful, and the client said, ‘You have to sue, I’m paying you to sue,’ but Axenia’s father said, ‘I won’t, it’s just not right,’ and the two of them started fighting, and I forgot to say this happened on the roof of that building, where they had a patio to take their best clients, and the two of them fought and the man pushed my husband off the roof.”

— Really?

— Well, probably not! This was a new kind of story, where Axenia’s father was a good man after all.

— Sort of.

— So, Catherine said, snuggling in to the booth, Axenia said her mother’s stories just kept changing as her dementia got worse. Each time she told a story about her husband he became a better person. She forgot about the woman her husband had been cheating with…

— Maybe her husband never cheated on her.

— I don’t know. My guess is Axenia’s father was totally unfaithful. Certainly she’ll never know, and that will always haunt her.

— Maybe he drove her over the edge.

— It’s a great story, isn’t it? So gradually Axenia’s mother forgot about the whole infidelity thing that had been torturing her. It was more like anytime she thought of her husband she had conflicted thoughts, so her stories were sad, but there was no more infidelity. Yet there was always something violent in the stories. You could still see her mother’s anger at her father, but the anger moved around in her head. A couple of years ago Axenia was showing a college friend around the city, and her mother was along. When they passed the building where her father used to work, her mother said, “I was married once. My husband went to that tall building and jumped off.” Axenia had to explain to her friend that her mother didn’t always remember things right, and that really her father used to work in that building, and that he hadn’t jumped off. “Actually,” she told her friend, “he had an office on one of the top floors.” Her mother said, “Axenia, that’s ridiculous. That is the building where he killed himself. He had a sad life. You need to think about your memories.”

— Her mother sounds like a handful.

— Axenia tried to reason with her, but her mother stayed with that story for a long time. “It was a sad thing,” Axenia’s mother used to say, “a matter of family shame. Your father was perfectly healthy. He had a good life, but he threw himself off that building. We must not blame ourselves. Life is full of mysteries. None of us knows another person.” Stuff like that. Axenia asked her mother about that secretary, to see if she remembered her. “Did my dad work in a big office?” Axenia asked. “Were there secretaries?” and her mother said things like, “Oh yes, it was a big business,” or, “Oh yes, he had several assistants over the years.” No memory of the secretary. But the bad feeling was always ther. There was always something violent about the way she told people about her husband’s supposed suicide. Like she said, “He hurledhimself off that roof,” or, “He jumped out into the air, and cracked his head on the sidewalk,” or one time, “He took a running start and jumped into the air, and landed on an iron fence next to the sidewalk. It split him in two, and an ocean of blood washed out onto the pavement.”

— Yikes.

— She was still angry, but the anger wasn’t directed at anything. It was free-floating. The suicide story made sense for her.

— He died of a stroke, right?

— Well, that’s the thing. Axenia told me that in the last two years her mother had really lost it, I mean she was really lost. The last time we talked, just before I left Chișinău, Axenia told me her mother no longer had any painful memories of her husband. She lost all the angry stories that didn’t add up, and even all the sad stuff about suicide. Axenia said her mother was peaceful at last. The week before, she’d been on an errand, driving her mother across town. They went to a mattress store to replace her old bed with a smaller one. Normally, Axenia avoids Fîntînilor, where Axenia’s father used to work, because she’s afraid it will trigger a bad memory. But she drove by it to get to the mattress store. Her mother looked at the building with a wistful expression and said, “Your father used to work in that tall building, and he was very happy.” Axenia said she nearly cried when he heard that. That very morning when I met Axenia for the last time, she had taken her mother to a physio clinic, because she was weak from lack of exercise. Again she drove by the tall building, and again her mother saw it. She pointed to it and said to Axenia, “There was a man who used to work in that building.”

Catherine waited for my reaction.

— Isn’t that a beautiful story? When I heard it I was in floods of tears.

— It’s sad, I said. She lost all her memories.

— It’s not sad. It’s a beautiful story. Axenia told me her mother was happier than she had been ever since she was a little girl. “She’s happy again at last,” that’s what Axenia said. “Mother is the way she was always meant to be. She’s more like herself than she was during most of her life. My father was a wound. Life with him was painful, but it’s all healed now. Even the scar has gone.” That’s what Axenia said, and I think she’s right. And that is the end of my story.

She had bitten the tops off all four triangles of her tuna salad sandwich, creating a hole in the middle.

— Catherine, I said, that was a spectacularly depressing story.

— It’s what you needed to hear. Your memories are, well, first of all, they’re a wreck, and second, they’re pitiful. Apparently when you were very little, your life was full of happiness. That’s why every time we meet you ruin our lunch by asking me where you’re going in life. You’re lost, you’re at the crossroads, you’re drifting, you’re wandering, all sorts of nonsense. My stay in Chișinău was quite a while ago. Axenia’s mother has probably died by now, but for a while at least she was actually happy. And how was she happy? How did she achieve that most elusive of all goals, which humans forever chase and never find? The idol of all our dreams? By lying to herself and erasing her own life from her mind. So that story was for you. It is a gift.

— You really are an awful friend, you know that, right?

— Look what I did. I told you a story you can actually use. I’m helping you. That’s what friends are for. Until you don’t have any.

— We’ve been friends for ages.

— That’s what you think. I’m retiring in June, not that you’ve ever asked.

— Oh. Will you get a vacation home, somewhere down south?

— Not vacationing, retiring. I’m going back where I was born, which is Orange Grove, Texas, not that you’ve ever asked. And I’m not coming back.1

She put her dissected tuna sandwich in a bag.

— You know, Samuel, you’re going to be very busy in the next couple of months. Anneliese is coming. I’ve assigned you two more zoos. Plus your regular job. But by the time it’s summer, I’ll be gone. You’ll have lots of time. You could go somewhere. An exotic destination. Mexico, or the Arctic. Or Mulu, Viperine told me about Mulu.

— That’s a hard one to imagine, I said.

— Well okay, she said, I’m done. Lunch is over.

She took her bag and her coffee and walked out.

I sat a while in the booth. Catherine was right, the next three months didn’t look easy. There were other things, too. I had samples to process from the plant, and more from the reservoir. I needed to write the report for Knoxville. Adela could call anytime. Fina might have a crisis and come back from college. But as Catherine said, by summer things would change. Without Adela or Fina, with Catherine gone, without Rosie, or Tee, or Alec, and hopefully without Viperine, my days would become quiet. I tried to picture an entire day without people. And if there could be a day there could be a week. Or a month, or months, one following another, on into the future.2

The emptiness was entrancing. I could almost see the silent years of my life approaching.3