Natural Wonders

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1 Ice Ages

Benjy, first slide please.

Let me tell you about the age of the earth, he said. The English scientists worked together diligently and announced that the earth had been created on October 26, 4004 B.C. at nine in the morning. Out of formless mud, the sun rose and spread its light, the animals got to their feet and began wandering around the fields. Trees arched up, leaves unfolded out of thin twigs and cast shadows on the meadow irises, purple flags wavering under the nostrils of curious gazelles. Adam took Eve by the hand, he said, and twined her long hair around his arm. She laughed back at him, pressing her breasts against his bare skin. When they walked about, they never encountered their footprints in the damp ground—the earth was spongy and unmarkable, so new and fresh that it couldn't be stained or torn.

Everyone understood, he said, that this perfect state had soon been corrupted. But it provided a kind of balm, to look back on that splendid morning, especially in this, the late afternoon of civilization, where mugs of cider have left rings on the side table, the dogs have chewed the bottoms of the parlor doors, where every stroll through the town is adorned by drunks pissing against walls. Hardly a work of God was not knocked around a bit, fear making the animals fierce, smoke from charcoal graying the blue heavens. In so little time, the pure and bountiful earth had degraded, like a hard chopping block a butcher sets up in his new shop, a year later so scored and scratched, so percolated with blood and bile, that it stinks even at night when the shop is closed.

Several hundred years later, the Swiss doctor Agassiz made an extensive study of fossilized fish. He had spent the summer in Brazil, looking at a new cache. His colleagues plumped into folding chairs in the Neuchatel municipal hall, ready to hear more of his absorbing stories about his undersea monsters. Instead he talked about the glaciers in their native land. He blamed these sheets of ice for atrocious deformation of the earth. They had dragged with them rocks and debris, which now lay strewn in long, slovenly piles along the path of their retreat. The ice, shoving down into the rock, had alternately contracted and expanded, working its way miles down, disrupting the smooth layers and forcing up coarse material. Trickles of water had frozen into gigantic wedges, bursting solid mountains into canyon walls, now tracked and grooved. The great weight of the sheets of ice had shoved the earth's crust down and compacted it. Uneven folds of discarded soil built up into hills, while valleys showed where the ice had lain, like the hollow in a worn-out mattress. Deep oceans had filled places that were now desert, as the ice had put the land off balance. He had been showing them for the past four years his fish bones laid in stone, that he had brought back from the unlikeliest mountaintops. The whole of their beautiful Switzerland, he said, had been like Greenland, blighted with ice. The glaciers were reckless wastrels, now banished to the tops of the Alps, but they had had their way with Europe, gnashing and roiling it. There is hardly a place you can visit in our fair land, he said, where you don't see evidence of this frigid desecration.

They would much rather have seen his fine pencil drawings of fish scales. He rendered his creatures accurately but still gracefully, almost playfully, the long-ago flip-flop of the fish brought out in the panache of his lines. "Look around you," he said, describing plains scored into desolate polygons by the action of frost, rocks shattered into fragile flakes where once they had been coherent. This rough treatment had gone on for 12,000, perhaps 30,000 years. They felt sorry for the earth, much more than they already had, that it had been tormented down to its very core. Now everywhere they looked they saw traces of the ice's cruel tongue.

It was not so easy to convince the English. When Agassiz visited there the next year, he showed his colleagues a raw hillside, polished by the glacier's scour. But the Englishmen explained that for many years, small boys had been sliding down the hill. The rock was smooth owing to the press of their canvas backsides. The Swiss saw deep pockets where the ice had scooped out soft soil. He pointed out the sculpted shorelines of vanished lakes. All could be adequately explained by Noah's flood, they said. The English wondered why Agassiz was so insistent, whether he was not happy, not balanced. The Swiss was deepening and lengthening the sadness of the world, subjecting it to abuse it did not deserve. How had the land lain there and let itself be mauled by these sheets of ice? Why had it doubled over and buckled and cracked open under this superior force?

Next slide, Benjy, he said. Bring the lights a little lower. No, no. Use the dimmer. A little more. A little more please. That's it. Thank you, Benjy. Let's go on.

2 Small, Bitter Victory

But here Jonathan's notes are not so coherent. He's spilled coffee on them, or the cat vomited on them, a sheaf stuck together with sandy goo. It's not easy to be his editor. I would rather not have the task. I know nothing about his subject, but am simply his widow, the much younger woman Jonathan married seemingly to spite all those who said he wouldn't be so foolish. Jonathan died suddenly and unfussily, leaving everything to me to take care of. The will had scarcely settled in its safety deposit box before the lawyer drew it out again and began riffling through his cabinet for accompanying documents for me to sign. When Jonathan's department chair suggested I put together a memorial edition of his lectures, I wondered for a moment if he had confused me with Jonathan's first wife, Barbara. She could have done a good job. She knew his work, had helped him write some of his early papers, before she took their children and deserted him. "You understood him so well," Professor Williams said. That was hardly true. I saw him in a way none of his colleagues could have, but I doubt that's an advantage in this type of project.

Jonathan's introductory course on the earth and its prehistory started with the ice ages. It surprised him how little his students already knew, how they seemed to take the world around them at face value. Their understanding was right on par with that of the stout populace first faced with the earth's violent and tumultuous past. "Right, Jenny?" he said. I nodded, because it was always easier to agree with him, though I never knew when he was teasing me. My knowledge of students came from my time in the typing pool, where they had sometimes asked me for a pencil in order to scratch a note to some absent lord of their destiny. Like me, they

would have agreed with anything he said, including that the earth was a large hollow ball with a garden in its core.

It seems to me Jonathan wanted to explain that time expanded and contracted, wheeling in and out, cast from the fisherman's rod into the turbulence, drawn back for inspection—ah, the hook's empty again. First God created the world in a twinkling, not that long ago. His creatures limped along, brutes really, until recently, dopes, children. Then the Swiss, the French, the Americans, even the English, measured the slow majesty of glacial progress and calculated back, adding thousands, millions of years to the world's age. Not that it would last any million years longer going forward. Cataclysm could smash all tonight. We still have only a moment to live.

"You're so soothing," Jonathan said to me the first time we went out alone together, when he, in all his nervous stiffness, asked me to have dinner with him at Puff's. I hardly knew him, had only spoken to him a few times, this rapid, disdainful man so much older than me. I almost thought he was asking me to eat with him out of misguided duty, as if taking me out was some obligation no one else had thought to attend to. He was likely gaining a small, bitter victory over his colleagues, showing them up for their thoughtlessness by showing some interest in me, which meant he really had no interest in me. The meal ground on, him entertaining me with tales of his travels, a brief mention of the absent children, now in college or beyond, and his hopes for another dig before he died. I scarcely had a life history by comparison, and found myself cast in the role of nodding and asking encouraging questions. I sputtered out, and he too held quiet, our awkwardness crumbling and fissuring the dainty white tabletop between us. "What a sweet, good nature you have," he said at last, in another voice entirely than the one that had narrated his discovery of a crushed skull in an ancient cliff.

Jonathan died right inside the door, probably clutching at the coat hooks in the hallway before sliding to the linoleum. It was not at all what I expected, but no one else seemed exactly surprised. A man his age, taking up with a woman almost thirty years younger, had been asking for such a fate, they implied. His death was thus in a way my fault. “In the hallway, in the morning, right after I’d left for work,” I found myself saying to his academic friends, to the one neighbor who knew his name after their many years on the same block, to my sister and mother on the phone. “In bed, then, naked,” they answered, though no one said this aloud. They imagined a fatal passion between us, when in fact we had endured a short and disastrous dismay. We were both of us foolish, him for falling in love with me, me for not putting him off for his own good, his colleagues seemed to beam at me from their creased, reddened eyes. His department chair was the worst of these saddened stumblers, he who had actually okayed my time sheets when I had worked in the department as a temporary typist.

This one came over last night to encourage me. “So you’re all right?” Professor Williams asked, standing in the hall, his feet right where Jonathan’s silent head had lain. I told him I was much better, bearing up, doing as well as could be expected. There was no way I could tell him anything else. I had been alone before, and was alone again. He thought he was keeping me busy, keeping me from thinking about things, stopping me from “dwelling on the past,” as he put it, by asking me to firm up my late husband’s lectures on the earth and its prehistory. It’s possible he saw this as a joke, a pun, I’m not sure. Jonathan and I hadn’t had much history, just a quick, impulsive marriage, and a journey into geologic time would not make up for it. I made the professor coffee after he managed to follow me into the kitchen, apologizing for the intrusion even though he had called first to make the appointment, then called again to confirm. I could

see that by the time the water boiled and the brew dripped through the filter, we'd have nothing left to say. "The garden looks nice," he said, looking out at the one flowering something emerging from a bed of mud and bare sprouts. Jonathan had kept the garden. I was too ignorant to know which were the weeds, so now I did nothing to take care of it. All the fall stalks had collapsed in brown spirals. Jonathan would have managed to chop everything down to neat nubs, but I would have cut all the wrong things.

Professor Williams promised me that there was some money in it from the university press, if I would get on with the edition of Jonathan's lectures. Always hard to say if the press would be in funds, but apparently some biography had sold well, and a tome on the local furniture industry had found buyers. He encouraged me to get the thing finished. "Jonathan was always pretty organized, wasn't he?" he asked me, as we nudged back down the hall to the front door. Jonathan's study gaped open, papers bundled on the desk, the floor, on top of the book shelf. Some of the books had their spines turned in and waved many multi-colored paper tags, set down under parts of the text he considered significant. The room struck me as a raft adrift, half sinking. Somewhere near the center of the desk his black binder lay. Filled with Jonathan's finely schooled cursive and interspersed with letters and reviews, coverless decaying paperbacks, his magnum opus on jaw measurement, graded quizzes and paid heating bills, the thing offered me the barest inspiration for the history of the earth and its explorers. The job of collating the lectures seemed to be far more than puzzling out dates and acronyms, and yet in it I had already deciphered a bit more of his introductory course. "Good girl!" Professor Williams exclaimed, patting my arm. I had the idea he couldn't remember my first name, though he'd called me Jenny on the phone. He had always found me, during my brief employment under him, to be a conscientious typist.

So, to tell you more of what you need to know, Jonathan would have proceeded from the podium if we are to continue this dubious project, the earth seemed to have succumbed to the

wicked depredations of the ice not once but perhaps four or seven times. The evidence piled up from every continent—thin double layers of sediment left behind in Swiss glacial lakes, a whole forest submerged and petrified just off Bermuda, acres of salt stretched across Utah, all that was left of a turbulent sea. Its creatures lay exposed as if still gasping for water, so plentiful that the geologists gathered them by flinging their hats blindfolded, then digging wherever they landed.

The whole system, they learned, from oceans to atmosphere, was powered by that fucker, the sun. And he was unstable, prone to spots and surges, throwing his radiation unevenly across the worried, wobbly planet. The poor earth's orbit had gone from stately zero, the fixture around which all else turned, to a lovely ellipse, to an irregular path that underwent "constant and significant change." It slumped, tilting somewhat, then straightened up as a stern word recalled it to its alert posture. The sun's radiation pinged it heavily and unevenly. The earth could hardly plan for this whimsical bombardment, and found itself flinching now this way now that, so that winters in one hemisphere lengthened, lasted far too long, catapulting us into an unhealthy spiral of cold. The earth skulked off, gradually stretching the time it spent roaming in the field. But when the sun whistled, it came limping back. So the blame lay on the sun, fickle, cruel—he was the one who caused the debilitating encroachment and retreat of the ice.

Only a master mathematician could hope to account for all the variables. At last the Serbian Milankovitch did the calculations, a precise measurement of solar radiation, first from his prison cell, then from Budapest. From his formulae he extruded 600,000 years of past climate data in stately mathematical rigidity. Not only his brother-in-law Wegener agreed with his conclusions, but all the European scientists read his manifesto, attended his lectures. His astronomical theory rose up complete and unassailable. They wrote him letters, not so much of capitulation but of gratitude for the steadiness of his hand. His dense pages of graphs, his eyes behind his gold glasses, led them to assign as incontrovertible his contention that he could determine the exact amount of the sun's heat that had reached the earth at any time in its long

history. The ice ages fell along his graph, as well as the milder intervening tropical eras. Milankovitch also described with mathematical rigor the climates of Venus and Mars. He may have wondered about Saturn too, as he dug up weeds from the garden plot at the back of his townhouse. No place eluded the probe of his computations. And the physical evidence confirmed it. The strata found to be a certain age matched his charts—tropical flora for what he calculated were warm interglacials, the stony husks of ice oxen in layers he predicted had been laid down during an ice age.

Milankovitch devoted himself to his memoirs once he had published his solar radiation work. On the sunny west wall of his garden he grew an enormous Lady Banks rose. The yellow blooms climbed up the high enclosing wall and massed against the back alley of the bakery, reaching at last the baker's family's second story windows. On the east wall, a dark-loving hydrangea petiolaris chiseled its delicate suckers. After a few years of sporadic progress, the vine tripled in size. Its cool white sprays lit the morning, while Lady Banks blazed from eleven o'clock on. In such conditions, Milankovitch hardly felt the need to do more mathematics. When a few anomalies began to challenge his theory, he remarked that he didn't have the patience to indulge the ignorant with elementary explanations of his science.

Many wonders surfaced that same year. A biologist at Princeton found a map in an old mariner's guide in the basement of the library. It was a 17th century copy of a 14th century chart, which showed in precise detail the coastline of the continent of Antarctica—not the coastline at present, shrouded with ice, but the coastline as it might have been some 7,000 years ago, when the land itself had lain bare. He speculated that an advanced civilization had navigated the entire globe, long before the age of the pharaohs. Their maps may have been preserved in just a few places, most likely in the burned down library of Alexandria.

A French schoolgirl published a diary of a year-long sexual experiment she had finally broken free of. She had seduced an older man, who told her he admired the stretch of flesh

between the hem of her outgrown skirt and her blue knee socks. At first it was all picnics and mattresses, but later he took her to cafes where he sat her in the laps of lesbian whores. One afternoon she allowed him to take her into the back room of a luggage shop, with two other men she didn't know. The three of them licked and kissed and fondled her til she was almost delirious, then they arranged her over a work table so two of them could screw her while she sucked off the third. She wrote meticulously of vomiting out the spume afterwards, and the agony of her bowel movement the next day, so racking that her mother took her to the hospital. Behind the curtain, the doctor was shocked, solicitous, then he spat on her, telling her she was a disgrace to her family.

Soon after, she decided to hang herself. She took a clothesline back to the apple tree behind the house. Just as she was about to place the noose over her head, a gigantic black crow feather drifted down from the sky. She realized she was meant to write her story, to prevent other schoolgirls from making her same mistakes. And now grown men hold her book in their hands, so much wiser and steadier than they may have been if they had not turned its purely educational pages.

In England, the geologists took a sample that would have, by Milankovitch's reckoning, been 22,000 years old. But embedded in it was a bit of Roman brick. Some Germans decided to reexamine the Alpine river terraces that had seemed to conform exactly to Milankovitch's historical climate progression. It was clear to the new team that some warm water mollusks had been missed or misclassified. This essential data was now in dispute. Several years later, a band of English students probed what should have been an undisturbed layer of glaciated soil from 25,000 years earlier. At first they were elated, but later they turned up a rusted bicycle bell. Milankovitch was unperturbed. It would all come right eventually. He stood by his calculations.

Benjy, next slide please. No, not that way. Forward. Good boy. Thank you. Let's move on.

4 Homo Diluvii

All right, Benjy, keep alert up there. Here we have, Jonathan would certainly have said next, Homo diluvii, unearthed by the Zuricher Dr. Scheuchzer, at Oeningen. This fossil, almost complete, had lain embedded in a silted shelf not far from the farm where his wife was raised. It surprised Scheuchzer that no one before him had come across evidence of early humans, that the skeletal imprints and paw marks, the impressions left in clay, were of hideous animals or gentle fern fronds. The men and women that God had wiped away in the Flood had vanished in their entirety until Scheuchzer stumbled across this strange, twisted thing. He dug it out whole and encased it in glass. The poor drowned creature shared modern man's outlines, with a few key differences. Scheuchzer knocked his pointer against the glass to draw his audience's eyes to the strange curvature of the spine. This stemmed from its general wickedness, Scheuchzer maintained, like hunchbacked old ladies, witches, goblins, this spinal deformity even now associated with terror and sin. Yet in his letter to the Royal Society, Scheuchzer noted that the sad remains had belonged to a man of exactly his own height, that is, "fifty-eight and a half Paris inches."

Scheuchzer seems to have been untroubled by Homo diluvii's strange, helmet-like head, crushed into two uneven plates. The flatness of its digits and its pronounced tail too he incorporated into his analysis of the slightly debased construction of the race of men God had eradicated.

"It's really a kind of thinking I want to get across," Jonathan told me, referring to his students, whom he considered an all too common type of sub-human, that is, undergraduates. The content of his lectures was secondary, especially as he had lost whole sections of it, left

behind on the men's room radiator, and gotten it hopelessly interleaved with chapters of others' books he was reviewing, letters from his father, and his copious notes for other projects, his work on jaw measurement, the chatty memoir, never completed, of the dig he did with his first wife, Barbara. Jonathan and I married after knowing each other less than two months. While the judge recited the marriage decree, Jonathan dug his fingers into my waist, promising me an unalterable period of stability and affection. Yet I find over and over again in his lecture notes that the entire geophysical story has been one of *plasticity and change*. It's possible he didn't really believe this, or he put it aside for my sake, confident that here at last was something lasting. It seems nevertheless that Jonathan's tale of Scheuchzer's sinful skeleton is to be followed by the French anatomist Cuvier's discovery that the thing was not a man of any era, but a giant salamander.

This morning I reached for my coffee cup on its hook over the sink, and at the lip of the drain curled an enormous centipede. It didn't move as the shadow of my wrist flashed over it. Like all pests, it radiated a patient petulance, as if summoned by me and now slightly annoyed that I was late for our appointment. It had heaved itself up out of the plumbing for my benefit, or else let itself down the steep stainless steel slope. It had thrust itself through tiny cracks in the moist wood behind the drain board, waved its hundred pointed red legs free of confinement, in order to make this meeting time.

"Leave me alone," I told it. The sound of my voice didn't alert it to scurry away. It stayed in its spot below me, still expecting. All I had to do was turn on the faucet and the thing would be swept down the drain. But I didn't see why I needed to be the one to murder it. "Go away!" I said. I slapped the edge of the sink, making a warning vibration. All its legs rose up in order and resettled, like the oars of a longboat. This graceful motion brought it a little farther around the drain opening, but still in place for the water to hit it. It waited pensively for me to take action. We did not understand each other, unless it had showed up for exactly what it got, its final lesson, its meager consciousness extinguished in the blast from the tap.

This I can tell you, or have Jonathan intone for you: Cuvier was the only one with the knowledge of anatomy sufficient to overturn Scheuchzer's conclusions. As a poor student, Cuvier roamed the countryside collecting objects, which he drew obsessively back at the dimly lit table in his rooming house, rocks, rotten fence posts, leaves, buttons, polishing his vision by transforming it into precise gray lines. He early advanced to fill the post of Permanent Secretary of the Academy of Sciences, where he kept six standing desks all manned with assistants trained never to interrupt him. He wrote furiously across the creamy blankness of the open folio, then moved on to his next desk, where a different manuscript lay interrupted. He spent all morning rotating around the room, leaving off precisely at the bottom of the page, though this left the sentence, thought or paragraph abruptly curtailed. "Like a man entering a charnel house, I see on every side of me proofs of dead organisms," Cuvier inked in his precise hand. The multiple threads of natural development, he wrote, the orderly integration of families and species, had been brutally snapped time and again by a spiteful Nature. The world of the past, he wrote, was unimaginably different from our enlightened present. His vision of history was so sharpened that the blood still steamed on the floor. He spent much of his time drawing the musculature of the cat, the vocal organism of the canary. Every Sunday, he and his good friend walked the outskirts of Paris, finding all around the cafes and cathedrals the silt of an earlier world. They ground the alien and hostile past under their boots. Scheuchzer's man of Noah's time, now permanently interred in a museum in Haarlem, had dragged its belly along the ground. The sinful hands that had counted stolen money and groped helpless servant girls, Cuvier showed had been flippers tapering into sticky pads.

Jonathan and I had been reasonably comfortable together, and then not. One morning as I left for work, he leaned in to kiss my cheek, and I swerved sideways. As we both righted ourselves, our cheeks passed by each other, only a few inches apart, so that my refused intimacy nevertheless took me through the field of his heat, the smell of his scalp and shaving cream. A

few months earlier, I might have inhaled with something like pleasure, or at least with nostalgia for the early moments of our love affair. I hadn't noticed the point at which his touch passed from pleasing me to irritating me, and now within the same tight orbit I seemed to have decided to evade contact altogether.

If Jonathan's notes were not here so blurred, I might be able to have him describe the expression on Scheuchzer's face when he looked at the lordly Cuvier's emphatic diagram of the salamander's limb structure. Most likely Scheuchzer would have refused to give over, in public at least. It was a man, he continued to claim, Homo diluvii, our reckless ancestor. He found many who believed him. In private, the scientist must have stared numbly at his fossil, the same gray trace in the rock now telling an ineradicably different story than it had when he first unearthed it.

5 The Modern

It's impossible for me to straighten all this out. Professor Williams has no idea of my difficulties. Jonathan spoke with such certainty, "The evidence is at last so strong that other explanations must now be discarded or modified." The only firm rule, he said, was that all the old junk has to go. It had taken what Jonathan broadly called the scientific community 120 years to agree that there had been an ice age, several of them. Now they fought on about what had caused these ancient debacles, and whether a sudden plunge into yet another era of unendurable cold could be predicted or prevented. All they discovered, he said, was that the world was in inexhaustible creeping flux. Rather than the reassuring progression of the seasons, even the magnetic pole of the earth had upended in a single tumultuous crush.

"What a sweet, good nature you have," he said to me at that first dinner. I wasn't going to disagree. He found me soothing, and I believed he was kind. He had introduced himself by shaking my hand, taken me out to eat, and later bought me a cup of coffee from the vending machine down the hall from my office. This scanty courtship had been evidence enough for both of us, at that point, that we were meant to live together in an easy, balmy companionship. It seems to me his own scholarship should have shown him that the kindest era gives way to a frozen solidity, or dangerous heat. When the evidence before us is at last incontrovertible, we must wipe away our earlier convictions, Jonathan's notes explain.

Milankovitch died unafraid, yet as soon as he was in the grave, his astronomical theory was declared void. It hung from the hand of a hotel maid, a rag full of holes, now used only to wipe the dust off the tables of the modern men of radio carbon dating. Milankovitch, a mathematician, had drawn a dazzling scenario with his calculations, but the scientists of two

decades later now had the tooth-cracking inflexibility of physical facts. The fine equipment in post-war labs filled headphones with exuberant clicks and pings. This metallic chatter fixed the dates of fossil death, on the side of the living, this number; on the side of the deceased, this number. Therefore, all the gross, crude estimates of the 1930s had to be scrutinized anew. Fine cores drilled up from the sea bed showed millions of compressed skeletons of tiny foraminifera, first the warm water sects, then the cold water ones, who in life never met, had sworn enmity, inhabited different seas, did not send thin airmail envelopes between their separate families. The vivid graphs, red bars alternating with green, traced an entirely different trajectory of past climatic shifts than Milankovitch's stern calculations.

It was not possible that both sets of data could be correct. Milankovitch's astronomical theory and the now definitively dated fossil record were in direct conflict. A new theory was necessary. Though there was no doubt which would win, the modern and the older mode had to be pitted against each other. The confrontation took place at a conference in Rome, where the geologists hammered out once and for all an agreement as to the causes of the earth's unsettling fluctuations. After days of rain, the sun shone, and the scientists and their wives rushed out to see the sights. While they tossed coins into the Trevi fountain, an American tourist unaffiliated with the meeting plugged her curlers into the obliging foreign socket. Within a few minutes, the hotel's entire wiring system shorted out. The cooks stalked into the garden to smoke, but the maids went on changing the sheets in the dark. The manager had locked their working papers in his safe, and they were afraid to abandon their stations.

In Ballroom A, a German delivered his paper in French, to a lone American who understood a portion of it. Nevertheless, these two were in accord, and wrote out a pact: if the new timelines were correct, then the ice itself had caused the ice ages, its own groaning weight ever reducing the temperature at which it melted, so that at the bottom, where the pressure was fiercest, the glaciers began to slip. On rollers of self-created melt water, the mountain ice sheets

surged into the lowlands, cooling the oceans and bringing more ice. The sun had little to do with it. Change was sudden, apocalyptic, and capricious. A series of two or three harsh winters were demonstrably enough to tip the equation towards increasing cold. The ice as source of its own generation rang true to the scientists' hardy self-reliance.

The American woman stumbled down to the darkened hotel lobby. "Nothing works in this place!" she fumed to the desk clerk. "Power will be restored shortly," the clerk assured her. Just then, the grimy electricians burst in, toolboxes in hand, cigarettes dangling from their lips. The scientists straggled in from their afternoon outing, and seeing the confusion, left again for the corner bars. The woman began to weep, huddled in her new windbreaker. "This whole trip I haven't been able to do my hair," she sobbed. She was sure she looked awful.

Benjy, he said, move on please. Thank you. This is the modern, he said: a cell, a safe, a locked box. Nothing gets in or out, no dust, no panting man, no woman stripping off her tights. The hands of clocks winding round and round seem so foolish next to the simple slide of lights from digit to digit. The old gas stations with their flip card numbers, crank rotating as father fills the tank, relinquish their place to blips of red flowing effortlessly one to the next. Content with this seamlessness, this uncluttered elegance, we can only shudder at the heavy-handedness of our ancestors, stuck in their dim analog innocence. The scientists of the 1960s now realized that the ice had built up on itself, and moved itself, and launched itself into the sea, until the formula tipped the other way, the earth snapped to her senses and said, "Enough!" The scientists agreeing on it instantly made it so. It had to have happened that way. The long undulations of warm to cold to warm had self-generated, the same way self-respect came from within, a man hanging his hat on a hook in his own hallway, rather than handing it to a pouty hat-check girl.

I'll bring his students into the auditorium to grumble and question. They jot down the formula for pressure and heat, inexactly copied from the dusty chalkboard. "What made the glaciers do what?" they complained. Those who recognized the formula from their physics class

sat smugly quiet, but most of them had been assured that for this entry-level class, no chemistry or calculus would be required. Earth and Prehistory was suitable for poets and harpists, and attracted as well the lazy and the hungover. In the darkened hall, the students can hardly make out Jonathan's chalked lines anyway. They have not been provided a textbook to follow, only a dense gray coursepack full of disparate type sizes. I should be the one giving them something more coherent, which the press will publish in its memorial edition, a brief introduction from Professor Williams setting off my dutifully transcribed rendition of Jonathan's manuscript.

"Self-reliance," hisses the girl in the middle of the central row, who always seems to know what she's doing. She shows her notebook to the girls to her left, and they correct the symbols and numbers they had miscopied from the board. The ice's weight caused its cascade into the sea, where the resulting decline in water temperature locked everything down into an immovable ball.

"I doubt it," the students complain. No matter how much Jonathan has spouted off, they see no evidence of an ice age anywhere. They write down the formula because they have to, but they don't believe any of it. This one is too simple, anyway. "Since water under a glacier acts as a lubricant," they might have heard him say, but they've already put their pens down.

They scratch their legs, bare below the knee in their shorts and skirts. Their backs are wet, sweated to the prickly velvet seats. The sultry air of the old, unairconditioned hall seems much more convincing than the man behind the lectern, glaring down his nose into the darkness at their feet.