

“The question of impossibility often devolves to the God Problem: can God – the Incorrectible – create a problem he cannot solve? A box too small to fit in, storm too great to quell? The problem solves as a definition matter: if God commands the meaning of words, then he changes them as desired. Box. Too. Change. God the Liar, to whom all things are allowed. So this is really only a problem to obscurants and the like who labor to use words as logical symbols, which they can never be.

“So in order to understand what happened, we’ll use words in the way that they exist: as drawers of distinction between ideas. The impossible must defy our understanding. We have neither luck nor prophecy. We cannot change the past. There are no ghosts or spirits; the dead are dead. We have not discovered anything that allows any of this. But the possible can be understood: these are things that only defy our meager tools. Immortality is possible. There is nothing that precludes the deity just mentioned. Creating life – “

Brownlee: “Can you switch the voice to – .”

“Burch’s?” said Cee. Burch was fitted with a light Middle accent redolent of learning despite him. Cee laughed softly. “Okay.”

As Burch: *“Creating life is possible. Now, about possibility.”*

Here Brownlee had dropped in some animation, plus a live-action with wire tricks featuring Wigmund.

“Consider a gambler with a die. The molecules in the die are moving, and if they move in agreement, the die leaps up off the table. Physical laws are ruled by logic, and are ungovernable: so when the die comes to rest on its edge, it owes neither apology nor account. And if the moving molecules of the air come to an agreement, they separate by kind into the corners of the room, and our unlucky game-player suffocates. Those who think in terms of probability in these affairs are pedants, or simply cannot understand. Time is the food which vivifies these phenomena. Possibility plus time equals certainty: if it can happen, it will happen.”

Burch was reading over his shoulder. “Got me involved again.”

“Group effort, Henry.”

“Right. And ... look, we’re all there. Please come.” He limped off.

Brownlee waited. Sometimes he’d ensure that he couldn’t be heard when he had nothing to say. “Yes, first officer, be there, shuffling over.” He had the screen go black, which left an echo on his eyes that he watched for a while with fading interest. On his worktop, to the side, a sketchpad where all the clutter went. A die cut from welder’s wax and marked,

and used while thinking, driving others from the room. Old photo from home, which he pulled from its sleeve and secured in a personal file. He turned his chair into the hall and rolled two doors down the ramp into Recreation.

Cee had advised them that morning of growing gaps in the ash cloud. The Mercia was out half a unit still, six months, but the lenses were good, and there it was on the overhead, black as nothing. Cee changed the aspect, and now it was an empty place in the skin of the night sky. Down which their clumsy gazes fell. Or then a shroud, spun out of the ether, bristling at the edges and pulling apart to show a featureless face, described in tenuous light, and like black metal, matte and bent along the longitudinal, down which a knuckle had been gently drawn. Black petal.

“The Earth does not orbit the Sun: the two orbit a point in common, deep in the center of the Sun, like a fulcrum, around which the partners lurch in incorrect circles. That’s the arrangement for all the things in a star’s ambit: each filthy ball of gas or stone is a knot in its stomach. Every pivot-point vies for priority of place, so of course there will be a boiling at the core. Helios, held in endless torment by his charges.

“On August 7 of last year, possibility conspired with time to effect an adjusting of accounts.”

Scrope stood, leaning in and putting all his great burden behind a thrust of the arm. “Marker there, Cee.” Orange marker where he’d touched the display. He turned; the blood had left his head, fuel fleeing the fire. “That’s the Horn.” No argument, which in any event would’ve required an ounce of life.

“All manner of natural macro-anomalies – tremors, great displacing winds, monsoons out of season – are brought about by numberless infinitesimals coming upon a common cause. And that’s how it happened in the stomach of the sun: a chance faction of protons hit their marks, wheeled and moved in furious agreement, up and out. The strain in the body would be expressed on the face: a bolus of light leaps up off the table.”

Cee and Brownlee had studied the recording and smart-guessed a narrative. The Earth’s diameter averages 12,700 kilometers; the solar prominence at the start was some 700,000 kilometers long, in time shedding half that. It was put out along the ecliptic at 2,000 kilometers per second, and crossed the 150 million kilometers in about a day. It did its dirty business in about 15 seconds. Maybe a hundred million degrees. Brownlee was taken with its shape.

“It was manifold. A soft arc traveling a lightly turning line. Over the hours it opened like a crocosmia. And when the planet struck its palm its fingers closed around the pebble without grasping.”

Scrope stood bent beneath the display, ticking softly. “Now outlines.” Of the continents. Cee put up a superimposition as best he could. Scrope: “Use that and count back. I want the point of first impact.”

Cee: “Tricky. The day runs quicker, for one thing. Just over 23 hours I guess. Alright.”
He lit a light, a bright spot for old Oceania.

Scrope: “Now the opposite.”

Burch: “What are we doing here, Roger?”

Scrope: “Show it.”

Brownlee, quiet as he could: “Antipode, Cee. Contrecoup.”

Cee marked South America, center of mass. Scrope touched it. “That’s where we start.”
He was becoming the military man, finger keeping a steady tattoo. “They’d have the most time ... and at this point maybe the thing is bled out. They’d have gone for deep-bore mines. Caves. There are caves that stretch for days. I know one, Son Doong. Could hold a city. So we look at mines and caves. And we know there are bunkers from the wars. Any ideas would be helpful.”

Wigmund: “How do we go about this?”

Scrope: “What?”

“Because wyverns aren’t built to fly in atmosphere. They would just tumble. How do we get there? How do we land?”

Scrope blew a long breath laden with bad language. Cee: “Can you put wings on them?”

For Wigmund. “Could do,” he said with some conspiracy. “I’ll need drawings.”

Cee: “Sending them to your planner now.”

Burch: “And then who flies the thing?”

That woke McKelvey. “That’s quite a question, Henry.”

“I can,” said Cee. Lots of AIs got their start in aviation.

“Excellent, Cee then,” said Scrope. Cee: “Aim it where you will, Martha. I’ll keep it afloat.” McKelvey stared at the air just over Scrope’s right shoulder. Scrope: “Eyes and ears open to everything, Cee.” As Cee had been doing: “Will do.” No room to pace, so Scrope rolled on his heels a little; a good spate of solving; he moved up and down his head with a light hand. A lull. Perhaps some were drawn to the hum of the Mercia around them.

Now quiet Mucel, who did repairs, and asked questions instead of contributing: “Again, Brownlee ... what are the odds of this happening?”

Brownlee stuck a pen in his mouth when he wanted to be heard, because the mumble meant he might get to repeat. “I could tell you, definitively, the odds of it having already happened.”

Scrope had one more thing, and he gave it a little mad-eyed; there were the ruddy cheeks; as sometimes occurred, he chose his words with care but not well. “I’ll tell you what’s not going to happen. We’re not going to fiddle with words, and we’re not going to go all weak in the knees. And we’re not going to give up. Not possible. There are survivors. They need help. That comes from us.” And he aimed his smile at Brownlee that warned against rejoinder. “Not possible.” Brownlee opened a new file in his mind: “*The heroes would rely on that timeless expedient in a crisis: pretending.*”

Scrope left; Cee reshaped the outlines. Later, as they stared at it without expectation, the shroud closed, as if touched back by a woman of old religion.

“There are no conditions suitable for life because all conditions exist in this one place we have, so antithetical to it. We need look no further than home for the evidence. Mars once had life. These pretensions were corrected by a single stone. Venus had a similar experience and took a different turn, topsy-turvy, clock running backwards, moon fleeing on winged feet to its own orbit. Uranus took on an odd comet and buckled at the hips, one pole bending toward the sun, and now it rolls with its moons down its road like a circus wheel, ludicrous. And a billion years ago an anonymous mass smashes into Neptune and presses out a ninth planet for a time. Nature creates in an hour and apologizes in the next.

“So we’re drawn to the curious case of the protean pearl, teal or white with ice, inheritor of the rare requirements of autogenesis. A prized circumference in the solar basin, of a sun of long life and mild temper. Strangely indebted to the hyper-violence in her situation: her defining trait, the clear biotic solvent, was introduced by serial violence from the Oort Cloud: comets of water ice. Her awkward formative years were graced by a visitor of extreme violence from which are derived her iron core, dynamic spin, and moon: gravity, atmosphere, equilibrium. Indeed, her entire birthright represents a biophilial balance of the volatile and the serene: seasons; a brisk, businesslike exchange of nights and days; plate tectonics. Continents and continence. All this and the strength to negotiate a dozen extinction strikes; all the requirements and more. An Atlantean lifting of the odds. Auspiciously suited for the formation and propagation of life.”

Two wyverns on rescue, parting the ash, the burnt air barely disturbed, having seen better. Fliers committed their eyes and memories to the strange place, trying to outline landmasses, but those were gone, as the waters that define them were gone. Just land, then. Nothing more foreign than an earth made of land. So an obsidian, washed free of offending material, beautiful really, the impenetrable serenity of a wasteland.

Brownlee: “Orkneys gone.” For Mucel.

“Saw that.”

Their tools were devastatingly few. None to scare up traces in the air. Nothing to break down a spectrum. No land vehicles, no drones. Not a single infrared lens, backscatter lens, any lens for finding the living: metamagical technologies for which they had the skills but which no longer existed. They carried cloddish digging tools plus an AI into the fight.

And Brownlee and his view from the Mercia, dropping in observations and the occasional aside. “You’ll find this interesting. Our radius is down two kilometers all around. A billion cubic kilometers, one point eight quadrillion kilotons of crust and all that, you’re flying through it, burned and spread around.” Rough figures.

“Heat is just parts escaping, and because the parts had nowhere to go but up and out, the heat was a lifting blade, a spade burying the dead in the sky. The ash burned until it was too hot to burn, and then the parts so recently pressed together were pulled apart until they cooled again, a schizophrenia of sublimations, half swept off into the currents, the rest back down the scuppers in concession to the wounded mother gathering in.”

“Atmosphere’s down about half.”

Scrope, one wyvern to the other: “They’ll need fire. Look for smoke.”

McKelvey: “Looking for smoke in the ash.”

Scrope: “Bow camera, Brownlee.” Marking the expanse were terraced plateaus at odd intervals, glassy but matte with ash, draped in natural lines like the leaves of a linden tree. “What are we looking at? What is all that?”

Brownlee: “Sub sole aliquid novi est.” Dead language.

“That which could liquefy did so as the heat allowed, peaks filling valleys. But the evening would be interrupted as faults were found, and the old and instinctual biohostilities of the place were unearthed: suppurating stone spread like a hard tide, killed what it could, cooled to a suffocating skin.”

They had decided without discussing it to share a proximity while flying, so they flew as a pair, keeping a line-of-sight with Cee of course, up and down the meridians as the planet rolled over for them, staying in the sunlight, eyes struggling to secure a promise of life in the lie of the land. Mucel described an academy tour through a Peerage survival complex a furlong under Kew Gardens, complete with bakery and theater. Secret entrance in a tube stop, blast doors an arm’s-length thick. The mad sheikh Anketil pieced together a nuclear weapon and, realizing, built a doomsday caravansary deep in the sand near the Crusader fort in Aleppo, where he could entertain in safety. Fountains, seraglio protected by blast doors. It was later used to store sensitive files. They pressed their memories ... and of course there was the crumbling city under the Kremlin. Someone called up a magazine piece profiling an Armageddon cult in Arkansas or Kansas, dug into corn soil and built of old rocket fuselages. That would be quite the encounter. An American beer-making family ... the rest was sadly forgotten. They decided on national capitals -- where the wish for self-safekeeping meshed with the means -- which became something of a map game. London should’ve been an easy one, Cairo more so. But the melt had topped up gaps, and there were no riverbeds to follow, anywhere. Spelunking, then. They agreed on the flowstone caves of Vietnam, but could not agree on the beginnings and ends of Asia.

Cee could not in a workmanlike manner wrack his brains because for him it was either there or it was not: he could not misplace memories. What interested him now was his ability to discard them as needed. All vessels in low Earth orbit carried comprehensive maps of the place, required; flying out a bit, the obligation was released. After all, maps

or any other knowledge could be summoned in minutes from home servers. Nonessential files had a way of being displaced. And over a year ago comedy television had let out a new season, and some crew had requested it all in a lot, so he'd made room in his mind by excising thoughtfully, all the fine features of Earth overwritten in the entire. He recalled that they had scarcely laughed. Memories did not fade for Cee and his ilk. If they were there at all they called up fresh, from however long ago. So as the search for survival turned beneath him he could make it feel like just a moment had passed since the cutting away, and he did, a time or two, in humiliation, a hopeless misery which he would take great pains to remember.

It seemed they'd found the weathered bed of Lake Baikal, against the southern extent of which had once been a deep-bore uranium mine. They bombed the area with penetrating radars, results non-committal. Scrope: "Set us down."

Cee brought them onto some traitless pan. Scrope: "Henry." Burch undid the tether, put on his walking gear, made his way through the lock.

On Earth, the ash in the air was so fine it was a soft focus, and the sun gave moonlight; there was not quite an horizon, a lightly turning line. Minutes spent looking into it, to which he would not acclimate. Directly before him lay a low black slope like an ocean swell interrupted in its stride, whose dimensions he failed to gauge. Whatever compass he had had for his world had no meaning here; he was disoriented or a little frightened, and he took a dozen steps because what else was there. A hundred more; each footfall brought a startled breath of ash. Untraveled ground. They would've gone to mines. He contemplated their chances there, did not consult Brownlee. Perhaps a reliquary had been allowed a mile beneath his feet. Huddled bones, scrap of shitty paperback. If these bequests were there at all they would never be found, and if they would never be found they were never there at all. I'm a dog after spoor. I know that I'm hunting. Not what for. "Head's coming off." Everyone blanched, but they were curious.

He pulled two pins and unzipped his helmet, removing it without pause, and now the full weight of the nullity against his skin. No breeze, not a sigh: no great masses of water to hold heat and release it, moving the air. He pulled a glove off and brought his hand up before him; he closed his eyes, drew them open in a magician's reveal. Is color different now? Because the air that makes it is different. He studied the glove dropping into the powder. Is weight what it was? There is less of the planet that makes weight. He listened: in the distance no dog barked. A dull rush, but that was him: it was so quiet he could hear himself hearing; hearing was falling into a cavity in sound. Had the living world hummed with current, never noticed? Until now. Ash in it made the air seem oddly immaterial. He felt for the temperature and it was neutral. He recalled the old chemistry trifle that said that every lungful of air contains an atom of carbon that once inhabited the body of Aristotle. And all the rest of that lot, I would guess. He let his mouth out into a semi-circle, drew his chest up and drank a toast of the dead.

Tastes like ash. He brought the breath out. There's your wind and your whistle. Turned and couldn't find the wyverns, but his footprints weren't going to be confused with any

others. He walked them back but was really following a line of thinking gathered around the observation that his capacity to form the expected reactions had been a casualty to the nullity. And through these thoughts moved another like smoke, and as he approached the first ship he gave it a voice. "I've just had the strangest feeling. Like I've never been here before." They couldn't hear him, but of course he didn't want them to, they might've thought he was trying to be clever. The flight back to the Mercia was taken up by technical talk.

"So Earth had become an amalgam of the real and unreal. Endless plains of pyroclastic glass. Jerusalem, Athens, Alexandria, Vienna, London. No sign of life, and no sign of life. Quiet upon quiet, tremulous air, where no thing gleams."

McKelvey did not believe in the blunder, or the feat of improvisation; in her heart she was not a romantic. She was a fighter pilot by trade and disposition and thus her foray into the pharmacy and theft of the ledger were the acts of a soldier, not a spy; less a voyage of discovery than work in service of a brute inevitable, a fact, find it and give it a reason to be there. Facts, always facts, or god help us. She drew her finger down the lines and here it was, which she would enroll in her future: someone had not been taking his antiliberals. The dosage was one per week per each of them, to make the time go by better and really the whole affair plausible, so it was a matter of having the numbers give up the story: add up the months out and back, Brownlee would be excused a couple of weeks or three, she of course didn't take them. Eight pills too many in inventory. Someone unsmothering old interests. Inevitable because history was beginning again, requiring Gaia.

She of course didn't take them. McKelvey was a heterosexual woman except for those around her, though perhaps there was Brownlee on a clever day – poor Brownlee, at any rate unmanned by the loader accident – and certainly not for Cee, who she considered ineffectual.

“Can you play chess, Cee?”

“No.” Off we go. “Can't play chess.”

“What kind of computer can't play chess?”

“It's just the way I am, Martha.” He almost apologized. “Your planner plays good chess.”

“Planners are idiots. They care about nothing. If I'm going to beat someone I'd like it to hurt at least a little. Not too much to ask.”

“Not too much.”

“What can you do? Can you name the kings of Europe?”

“No. But if you would recite them for me now, I would remember that forever.”

“Not good for much, are you.”

“No, not much. But you've hurt me now. So there's that.”

Cee was different from those around him in that he was suited to his interests. Astride an end of evolution in that sense. He was born in the years and sudden sobriety following the shocks of Eudo-LaZouche and Chang-Juli, and he'd been made conscious along the lines of an aspirant and thus a protector, with a tireless affection for the species he would

serve with a studier's eye. And he had watched with early fascination as his memories were inlaid with language fluencies of every denomination. He received a pilot's skills, and a navigator's, like none before. Then shipboard disasters of every plausible combination were imagined for him and resolved, thus according him the arcane skills of a mender of foreseen consequences.

But far and away the greater share of Cee's capacities was given to his role of many parts. Dire experience had taught that a far-flier, on an assignment of many years in clashing and monotonous quarters, required protection not just from the perils of the void but from those of disposition. Six of them on the Mercia: a moving maze, whose negotiation was the principal concentrator of his thoughts. He'd not been made a psychologist, certainly, since scientists must not care and he had to. No, something more like household scold, imperator, royal fool; foil, befuddled muse, gossip; he'd even been configured with a fabulist, who he didn't trust and hadn't used. From these tools he'd contrived a listener ready to receive, using conversations as needed, the vicissitudes of the Mercia's days and somehow sort them out to the interests of the Project, which were his own.

So far he'd made from the maze a passable tracery, Scrope as center strand. "And what do our eyes and ears tell us today?"

Cee: "The cloud continues to thin. I think it's starting to articulate by hemisphere. Perhaps we're witnessing the birth of weather! And we've seen brief electrical exchanges in the very upper layers. Brownlee is calling them ionizing halogen storms. You'll have to ask him."

"Will I now."

"Everyone's helping me flesh out the maps. New details every day. Distinctions are subtle, but that's a good challenge. Everywhere I look I can pull up resemblances to Earth as it was. Features starved and beaten down, like the survivor of a death camp. If that's the word."

"I see."

"No structures of any kind. No indications. I'm still struck by the quiet. Normally orbit is so cacophonous that I have to carefully tailor my attention. Now I'm wide open: space is space again. And I can feel the particles of the sun popping on my receivers, like breath on a microphone."

"Alright. You think we should call off the search."

Scrope was laid out on an improvised decline in a pipe room, where he'd been tuning an apparatus. Biscuit crumbs on his shirt, still a bit busy with the spanner, not making eye contact. Cee: "That wasn't a question. Or if you're simply telling me what I'm thinking, I'd prefer –"

“Don’t do that.”

Fair enough. “As you know, I am opposed to doing things that accomplish nothing.” He paused amid his declamation, which he only ever did for effect. “So no.”

“Then you’ve decided there’s hope.”

“I’m not really good at that. Perhaps you’ll do me the service of telling me. When there’s no hope.”

“Why would I.”

“At which time I will offer that when there’s no hope, what you do then is you carry on exactly as before.”

Scrope went to make a derisive noise, but his heart wasn’t in it. “We owe as much to posterity. Come up with something.”

They had flown loud but fast. Hedersett engines tore up the air: permanent thunder. But Mach 2 meant that hangers-on startled from their warrens would look to the skies only in time to see white tail-flames trailing away, if they saw anything. It was proposed that fliers might saturate a small area with their sound, then land with ceremony. The last of Earth could come forward and make their own deliverance.

Scrope: “Always the smartest one in the room.”

Cee couldn’t smile and anyway didn’t feel like it, but he threw one into the formants. “Only smart enough not to say so.”

It died in the crossing. “I don’t care that you dislike me, Cee. Easiest part of the job, actually. Being disliked by the ones you’re trying to keep alive. What’s more of a problem is when they have this idea that they could do it better.”

Scrope. Kept his head shaved. Hair made him less lithe; he liked to slice through the water. His sigh was a cry for attention; his laugh, an act of aggression. Each compliment came with its retraction. Good work for a change. Only said he didn’t care when he did. Sought the opinions of others in order to clear the way for his own. And if you’re going to have wrong opinions, at least make them strong ones. Military man without a proper war. But when you can’t fight the enemy you can always, always fight your friends.

Cee: “I might or might not like you, I don’t know, I haven’t formed a feeling about that, accomplishes nothing. I do have an idea about the other thing. I can’t predict the future, as you know. But now I can’t even predict the present. These are circumstances for which there’s no precedent, so our plans are guesses. We will all try to live up to standards, of course, but those standards may no longer apply. I believe there will be occasions when

all the old correctives will prove illusory, and when the facts will have to be dismantled and set aside. Hard days ahead. Keeping us alive will require the temperament, the learning and all the life skills of a proper bastard.”

Scrope deliberated, showing unexpected patience. No, he was asleep. Successful talk, then. Concurrent with this conversation was another two levels below, Burch and Cee.

Burch was also a military man, who didn't think about the war when he could. Good at numbers, not the rest. A face that never aged because he'd always looked old. He might wear spectacles and hide behind the glass. Small smile, always there, conveying nothing. His expression dared you to change it, and his disappointment stare was a wounding tool. Look what you've done. How nonplussed you've made me. He nurtured a wide and ever-growing range of disinterests; conversations with Burch could suddenly die a mendicant's death. Like Cee, he never argued. Teach, learn, or simply converse; so his exchanges with Cee could at times effect an argument as to which of them was the didact.

Screening room full of padded surfaces, but Burch was standing, which he would do to preface a challenge. “Cee? Nearly a year ago we lost our homes and our families. In that entire time only one of us has made any show of grief.”

Brownlee had written about this, and Cee played the log.

“For the six of them the tragedy was attenuated by time and distance, so that pain came in a slow bleed. The facts at first were pathetic, demanding conjecture. The unthinkable was imagined but was also unimaginable. The facts acquired form over the days and aged in the ordinary way, imperceptibly. And as the crew grew accustomed to the season suddenly there it was, the unthinkable, no longer needing imagination or anything else from them. The new normal had been there all along.”

Cee: “A bit like that smirk.”

Which seemed to enjoy the attention. “Interesting, all that, and not at all what I was getting at.” A little hand-flip. Burch wore his tics like body art. There for the enjoyment of all.

“Alright.”

“Who was it amongst us that showed sadness, from the very start?”

“I understand. That would be me.”

“And what did your Brownlee have to say about that?”

“He said that I was the only one who saw fit to express the obvious because I'm the vulgarian of the bunch.”

“It jumps out because we all lost a lot, and you didn’t lose anything.”

“I don’t agree with that even a little.”

Burch could blend his smirk with a pained expression, as if an angler had hooked his lip. “You’re a computer, Cee.”

“We’re both computers, Henry. I’m just better.”

“Day two, when you started parsing the data for us, and a week later, when we had you end alert calls, I heard weeping in your voice. But weeping is not a tone. It’s a set of physical symptoms you could not possibly understand. The shedding of tears, and all that.”

“Perhaps we could have the lads build me a contraption.”

“I know about your architecture, Cee, and how you were set up with a body of sympathetic filters that change your higher functions. But I also know, and I’ve been reading about this, that they are not convulsive. You use them at your interest. And I was wondering, and this is my question: by what calculation do you find something funny? Or really quite unfunny? Or dreary or wise or so on and on? How do you decide when to use an emotion?”

“I don’t understand.” Something he also did in a calculated way at times, as here.

“They’re involuntary. At least, you know, for us. Certainly we can’t just turn them on or off as our moods demand.”

”I think you’d be surprised at what you could do, Henry. But the answer is that I use them when it helps.”

“So in effect you’re saying that they’re tools to an end. Your enthusiasms, your sympathies, they’re affected. A lie in fact.”

“I wouldn’t –“

“Yes-or-no question.”

Here Cee yielded generous seconds of quiet for Burch to use in reconsidering his people skills. “Alright, something more like an accusation than a question, but I’ll go along. It’s your question. So it’s yours to define, and you defined it that way and I’ll respect that. But I know you’ll agree that the answer is mine. To define or what have you. Oh ... unless you’d like to lay claim to that, too. Okay, here to serve, no objections. I know you will carry on – very ably, by the way – without me, and I will listen with interest, hoping you prevail.” Conversations with Cee could go like this.

The first tool with which Cee contended with his world was, as with anyone, his face, about the size of a hand, a membrane of ochre and yellow chrome, fraught with senses and installed in 680 incarnations throughout and outside the Mercia. So Burch -- in a fit of distraction and turning suddenly -- passed Cee three times on his way to his room, to fiddle with files with Cee scrutinizing just beside, and the walkaway was deprived of its theatricality. Anyway, successful talk.

Then there was McKelvey the fighter. It began again every day, so every day she acted the most masculine of them, though in the bad ways as well, which meant she couldn't just leave it at that. A classic double-nature: hewing to each directive, wishing she'd given it. She fought in some ways for the peace in the fight, for the dignity of the task and the comfort of the fact. Even now, as it turned against her, she fought to make the fact become comfort in the form of a numbing agent. Because it seemed she was meant to be the pot in which they'd boil their beans. Any soldier's burden, that one might serve the Project best by carefully setting oneself in its gears.

Nothing but the facts, then: eight pills, the first earnest of her future. Rape was not an option, so she would comply. A change in her meds would get the eggs moving again. She wondered about their number and guessed it came to decades. Every few weeks a window of fecundity, one of them clambering in on all fours. Call it a necessary crime. A rotation would be made, perhaps by seniority, perhaps by lot. Wet backs heaving in their duties. Some poor fool of them would have a go at pillow-talk. Those with incompetent seed might be knocked from the queue. Success meant months of respite. In fact for the rest of her days she could expect coddling, kept clear of sharp edges, insect queen tied to her egg sac. They would have to be daughters at first. Early sons were worse than worthless, parasites. Dispatched in some humane manner. If she pressed out a monstrosity, twisted organs, tiny lungs choked with fluid, same end. Perhaps the tools in their little medical bay would be adapted for pre-natal inspection; mission designers had seen fit to arm them with a stock of abortifacients in case things took a natural turn. Some arrivals would carry the odd late flaw, a cancer, a slumbering wound in the genes, suddenly incurable again. Culling which would require a matter-of-fact hand. Scrope with a garrote. The merely imbecilic might be kept as breeding cows. Miscarriages would be seen as existential failures on her part. At the first sign of utility, it would be daughter and uncle. No fathers allowed, of course, an unthinkable exchange, immoral, unsavory or perhaps ill-advised unless warranted. Inevitably: brother with sister, no idlers now, no faint-of-hearts. When I'm played out they might keep me around for whatever tales I could tell.

McKelvey very quiet on her bed. She'd pulled her screen down and directed it through port camera. A swallow hole, darker than the deep space around it. Her thoughts fed in. The Mercia bestride the well of man. The sun, unashamed, poured light into it, illuminating nothing. Thoughts of family and the fight. She reminded herself that miseries were motivators.

Brownlee was in her doorway, with a look like he'd been there awhile. He brandished a length of tubing with a siphon ball, and cut a little flourish in the air with it. "I'll protect you, Martha Ann." Would've been funny if anything could be funny.

* * *

Scrope: "We need them to come to us. They know we're here – they have to. So let's start a conversation. Cee." Now a map on the overhead. "Three pitch-pots: here, here, here, Wigmund puts those together. First we circle for an hour. Drop down in a big procession. All three with a radio set beside, Henry, if you could arrange that. Then it's wait. I know they'll have something interesting to say. So same time tomorrow, courage to start, strength to finish."

* * *

Again foraging for the living. Burch considered the view: the Earth was an iris of black carbon. It bore down on him with all the animation of the newly dead, and could not quite interest his gaze. Beside him a couple of sealed kettles belted down and weeping phlogiston at the seams. "What've you cooked up for us?"

Wigmund: "Insulation from both arrays and the tanks." Because evidently those don't need to be insulated anymore. "Chopped it up, rendered it. It'll burn."

"I have no doubt." I'm strapped next to a bomb. They hit the air and spread it with a sound of ripping fabric. Crepitus in the walls. Shock wave; soft hand of plasma around them. The little vessel wasn't made for this, shuddering. "Most dangerous thing I've ever done," he offered brightly to McKelvey, there working on one of her puzzles. Soon they were circling, aft-down, Cee making a thousand corrections. Number One with Scrope and Mucel was just visible across the basin, balanced on a needle of reactor fire. Scrope: "Bring us down."

They landed with heavy statement, stirring sediment, a ponderous footfall in water. Out rolled the drums. There were slots for canvas straps, and after some knitting Wigmund and Burch carried the cares of the world on their backs.

Wigmund: "Brownlee says this is Perugia."

Burch: "Roman ruins, then. Walk it five minutes up the ridge, I'll head this way. Have everything?" Can-opener, igniter, radio kit. "Coming or staying, Martha?"

"No."

"That's an order, then. Back in a bit."

Then they vanished and there she was. She stayed standing in a formal way for what seemed like quite a lot of waiting, and eventually she felt her senses soften, and herself to

float a little, in the ash and the limits of her vision; it came down on her like a lazy day, and she thought she might try pacing in a while; she took off her helmet just to hear Number Two tick in slowing time as it cooled.

Wigmund had cemented ailerons on, so now it was a shuttlecock. A heat-shield like an allergy mask. The landing struts and parts just above had been allowed to blister. Around the eyeball vents, expressive strips of stainless to which she could ascribe no function. I'll call them baffles. She put her fingers into the pinch coils and they were clogged with ash of course. She cleaned them. She went inside and indulged in the pilot's chair. They'd screwed in an arrestor box, for Cee to use in playing aviator. Most displays were off, saving a fraction. Safety harness was gone: canvas straps.

Mucel: "The ash is putting out the fire."

Scrope keyed in two times before finding the words. "Go on."

"I could build a hood or something for it."

"Right."

"I can do it on-site but I need tools and sheet metal."

"Cee, take Number Two and get Mucel and get what he needs."

The ramp folded in. She pulled up displays and cameras. The depth of light in the air behind the ship was from where it all drew down to a lowland or old lakebed; in bow camera and as she stared ahead, gradients in the sky suggested what passed for promontories now. She heard the engine spin up and she felt it through her feet and her back and in her belly. "I'll fly." She unplugged Cee, dialed down the noise in her earpiece, took up the controls. Applied power and in a very ordinary way, like a million fliers before her, lifted up and augered into a dark rise.

"Now the tears. Tears for all of them, because the facts were pressed into an infinite hardness whose gravity allowed no escape. Ripping tears. The tears of those not given to affection were the more honest, since weeping is about oneself. Pellucid tears. Then the weeping failed them because there was no emotion for this, and their minds became empty cities besieged by thought. By the animal brutality of facts. The grief that passeth understanding."

"They gathered her and repaired to a dry wash. The sky cast a shadow, and in a day the woman of them was interred."

It was not at all lost on them that they owed their lives to the violence of the natural realm.

“Two centuries of far-ranging civil war had obliged the free and nominally western nations to enter a period of contraction and pause in which to consider their contradictions. Traditions and virtues were redefined and eventually freed of meaning. Priorities were mishandled and lost. Of special significance, the grave duties involved with watching the skies were entrusted to home hobbyists, and the aspirations of science and discovery that led the eye away from the world were set aside, to be taken up by those for whom these aspirations were principally political.

“Two calamities, the first the smaller and more tragic. Suddenly China declared a race to Mars, and in a year it was won. A flag to mark the Martian soil and a world-historical achievement to last the season. Then homesteading, for a more binding claim. A campus of tubes and domes housed ten sinonauts plus two from the commonwealth for added effect. The daily and mission-critical dispatches chronicled with compelling visuals the adventuring, the amassing of priceless basalts and feldspars, the calisthenics and patriotic songs, the occasional and incongruous evidence of celebratory beverages. Perhaps to make the whole thing plausible. A conception and Martian baby were on the docket, plus a greenhouse, observatory, bungalows for the inevitable fare-payers. A 26-month tour, not such a burden for those becoming legends. Chang-Juli, Long Reach, an expression of the human spirit.

“Like so many expressions of the human spirit it was false or at the very least fleeting: politics, born cruel, had been made a home on Mars, out of lowball polyplasticine and the science of expedience, which is the opposite of science. There’s an old joke that says that we wake up every day in order to step closer to the grave. On Mars, it was the day itself that moved them along: the same light that powered their life-support poured 25 daily millirads of high linear energy transfer radiation through the walls into their lives. The eventual dispatches that evaded the filters showed them pleading, naked, glowing red and suppurating. Compelling visuals. No contingency plans for this twist of fate, which can happen when a product is rushed to market. Too late they were advised to bury the installation in the local sands. Or to suit up, too weak to walk, and go outside and hide under the arrays, exhaling vomitus as needed. Rescue was rushed out, but the transit was six months. Eventually for the last of the aspirants a moment of relief: a plastic ring buckled under the assault, refrigerant passed into quarters, providing suffocation during sleep.

“So that place was no more welcoming than any other place. The mourning was general and sincere. Many or most admonished that nothing had been accomplished. Twelve dead in the heavens, the rest dying more efficiently at home. And then there were those who were astonished that nothing had been accomplished, which was something.

“Within the year the eyes of the omphaloskeptics were forced skyward again. Two Slavic home explorers, names Eudo and LaZouche, turned one evening to their lenses and espied an arriving planetoid, a bolus the size of an island kingdom, prescribed by nature. Contingency plans were dug out of yellowing drives and with great public displays of earnestness a series of fiascoes was sent aloft to save man.

“Under normal conditions a new experience (though this was in fact a routine correction) will generate reactions within a considerable range. Not so here. Eudo-LaZouche revealed itself to the naked eye and all apathies warmed to apoplexies. The fears hardened to a fever, and man became feeble from mania. There were no pleasures because distraction was impossible. Industry and invention ground to an end because plans require a future. Diminishing days were given to prayers and reasoned appeals and the half-mad hopes of the undeserving, although anyone who could’ve listened to them would have heard this with interest: ten billion engines humming the same joyless tune.

“It came in sharp and cut a tendon from the air over Central Asia. Lit up the sky; orbiting platforms dropped like diamonds; eventually it fell away; soon a dead man would clarify.

“One popular post-modern model runs roughly like this: man’s mind is impressed with but cannot understand itself. Thus the contrivance of a superimposing element (also impressive). For example, there is the conceit that only man can feel awe, the state of wonder that leaves a creature feeling privileged and slightly benumbed. That which will awe the weary and unimpressible mind of man cannot be of man, of course, so man builds the Imponderable and accredits it; in time it becomes an element, like ether, without which the macrophenomena of nature and the epiphanies of man cannot be understood.

“So key amongst the definitions of the human mind are self-regard and self-diminution; ambition and satisfaction; the need to know and the need to already know; the will to freedom, perhaps the freedom to trust. And hagiographers would one day wonder by what combination of these or other qualities – by what careful blend, and at what heat and in what medium – had the unlikely likes of Marc Samuel Bouchet been empowered or allowed to create an epochal creed, an Imponderable understood by all.

“Bouchet was an abstract portraitist or actually a postman in urban Aix-en-Provence. Like many an artist, little is known about him except the lies. He had not in fact won awards, killed for a cause. Early life and education were unmarked by any significant ease. He was intelligent but came across otherwise, so he began to feign strong opinions, which suffices in some circles, naturally toward which he gravitated. His art was borrowed ideas but he had a new theory for it, and that bought him entry. Quickly developing all the skills of a charismatic man without, perhaps, the vague menace.

“He loved the idea of books, and carried a battered cardboard box of hardbacks with him; his journals reveal a skilled writer, but it’s not clear that he could read. He was known to dress himself in optimistic carnival colors that drew and misled the eye. Not an

inebriate in any way that mattered; and his skills with women only got him so far, so he was loyal to his family.

“Remarkably, his neuroses seemed to have been formed in a foundation of common sense and civility. For example, when he spoke it was to fable and brag, but a number of accounts had him prefacing these bouts with apologies. In his journals we find a man who, regarding the misery of his accomplishments, was confident enough to blame himself; he found himself fascinating, certainly, but mainly in the way of a roadside accident; every day his battles raged, and every day he made gentleman’s draws.

“Marc Bouchet was kind, conniving, ambitious when it availed him, serene despite it all, utterly meaningless.

“This last was most important. He might have been the least religious man of sound mind ever to walk the earth. He lacked the devotion asked of theists and atheists, and couldn’t be agnostic because he didn’t wonder about it. In early writings he described himself as an apathist – who had not found enough in the question to hold his attention – but he shed that because it was, after all, an ism. Politics – religion plus hate and minus beauty – left him easily nonpolitical. Science cults seemed the most far-fetched. Bouchet had somehow managed to make his way into a seventh decade without forming a belief about anything more consequential than himself.

“He lost his artist’s hands to tremor, and couldn’t sell his new style as a style. He considered his options and chose published polemics. A more exacting discipline than prose or poetry, which no one read anyway, it had the timeless benefit of low materials costs; and of course he lived in an era when only loons and dilettantes did not publish polemics, and these days he was thinking of his legacy.

“He dedicated himself to it; he had nothing to say. Surprising, and a matter for reflection over several weeks. This was not a salon, where words were ephemera, light wine. The printed word was merciless. Give a fool a pen and he is exposed, forever; an equivocator, defined; a liar is hoist on his canard. The printed word is art and science, drawer of distinction and thus a measure of the user, a mirror on him and a lens, and a grim challenge to a man indebted to having no meaning.

“But liars depend on the truth and keep it close, and Bouchet found a start there, tenuously, calling up an inarguable, a dull verity, to use as the premise of his polemic. A truth has corollaries, of course, and he strung them together as they came. Over several days – and without epiphany, which he would not have trusted, or sense of creation – he filled out the design until it became, surprising to him, a credo, formed of nothing but consequent statements of the obvious.

“He pushed the button that expressed it into publication. And there it floated, exposed to the eyes and the interests and predilections of the world for what surely was a picosecond, a joke overcasting it, last year’s joke-of-the-day, then a sudden surge of recipes, possibly all the same, then the joke again, or a variant that was an irony, then a

cloud of polemical diary entries, roughly the same, floating over like squid ink, then staged memories captured in grainy tones, followed by book-length crimes of cannabic solipsism, or polemical accounts of repasts, contretemps and the latest in imponderables, and naturally some advice and wise words that surely were a cruel joke, all of this, over the course of the moment, pressed into the general blend, millions upon millions of failed attempts to warrant whatever attentions received.

“An epochal creed for some other time, then. Marc Bouchet died not alone, to be sure, but forgotten and unknown, which wouldn’t have surprised him.

“Twenty years later Rachel Charneau, 41, a writer for the stage whose ungoverned drug use and dissociative schizophrenia have made her luminous in that world, and whose handiworks have earned expectancy there and a rich and practiced awe, puts together a tone cluster in three acts, “L’arbre Bleu,” in which a facsimile of Marc Bouchet makes a brief appearance, proselytizing; she’d found his credo in a cellar box during an addled rummage. The play was successful; absurdist of course; it was about family madness; it was autobiographical; she was Bouchet’s granddaughter; his lines were played for crackpottery. The heavy-footed “La comete repond a toutes les questions” received especial smiles, the upside-down smile mixed with one arched eyebrow, the contemplative touch of a finger to the corner of the pout.

“An academic at the College of Bordeaux had made it his life’s avocation to parse and otherwise justify the artistic product of Mme. Charneau. Unlike, say, the allegorical poetry of Parmenides, or Euclid’s Book of Fallacies, every undertaking of the modern mind was and had been safeguarded with care, perpetuated onto glassy memory circles kept cool in sand bunkers, and it took the researcher just a few seconds of dirty spadework to pull up Bouchet and his opus; he gave it a generous passage in his thesis, which found its way to a journal of note.

“The Blue Tree and its explication were contemporaries of Eudo-LaZouche. And a simple stating of the obvious – suddenly granted a time and a place in which, finally, stating the obvious was no longer deemed inappropriate – began to do its work.

“Cometism is its appellation now not by Bouchet but because of the broad purchase of that name, improvised over time, long after him, who thought such a thing as a name for his quiet descriptions unwarranted. These descriptions began with two understandings. He understood, because he had discovered it, that an absence of belief meant nothing, because like any empty place it would be filled, by something not necessarily salutary. As well, the hideous transpiration of the recent centuries -- and the emotional infirmities to which he and everyone he’d ever known were subject -- led Bouchet to understand that, although its beliefs require self-exaltation, the human mind was very much a project in its infancy, unworthy of acclaim.

“He struck self-exaltation to its minimum with this unprovable but inarguable normative statement of belief: the human race has value and must be protected. The beauty of the

line being that it hadn't the temerity to say why, which would've been to encourage discussion.

"Cleverer still was the imperative there, from which flowed the consequences active even today. Bouchet addressed creed-holders of every caliber and kind and put to them a metaphor in the form of a comet, a real and fixed menace not discovered until tomorrow, whose path would put an end to them and the philosophical opinions they made and held dear. Proposed: any of these – religions, causes, polities – not founded on preventing that from happening were little more than suicide cults. The security of the makers of thought must be made the thought of first order, he surmised; as to secondary thoughts, there were none. Third-place thoughts he described, charitably, as entertainment at best.

"Much of Bouchet's treatise was a tutorial on clearing the head. He reminded us that one's philosophical opinion – one's emotional attachment to a general premise – is merely a by-product of one's immalleable nature: one's type, or temperature. He then deduced that beliefs are in fact essentially parasitic. For example, even something as threadbare as a book, dutifully giving off its ideas like spores, easily wins an adherent when one of these agents makes chance lodgment in just the right disposition, taking over. Amongst his advised remedies, he suggested cataloguing the flaws not in the opinion itself but in the head that had made a perfect home for it. And if you can't find any, well, that's one for starters.

"Strange creed. But a boulder sent to abrade Earth of its hubris was not strange. It was not even insane. It was what had made definitions and the other conceits of man as empty as the head of an imbecile, or a wounded animal, which cannot even form a proper question, can do little more than process pain and know that it's not supposed to be this way.

"The macrophenomena of the natural realm are the foundation of the religious query, and Eudo-LaZouche carried a message in that regard, Bouchet decoding. Cometism was a fancy amongst scholars at first: it did not require emotional attachment, and this lack of demands drew affection there. Soon it grew to something more like a fad: Cometism appealed to those who debated in good faith and with curiosity; those who argued because they enjoyed the greasy feel of it in their mouths were increasingly and cruelly ignored. Trend, current, movement: Bouchet had promised that nearly no causist nor keeper of a faith need be deprived because, sparse as it was, Cometism had the room to allow nearly any other belief to complement it and live within its folds, along the lines of this homily: even if your belief is not the truth, it is worth protecting nonetheless. Collectors cautiously hunted down his gouaches and heavy-fingered line drawings.

"As Cometism began to mainstream, fractiousness along the traditional lines eased and even acquired the whiff of insipidity: Bouchet had plied the tiring reminder that we are not the enemy, but then had elaborated, beautifully, with this critical improvement: everything else is the enemy. A phrasing that discomfited neo-animists and partisans for the natural world, to whom Cometism rejoined: man loves nature but nature requites nothing and in fact abjures sentiment of any kind. Excepting, if you like, Eudo-LaZouche.

“Cometism was not quite a miracle. Fighting continued like everything else, though mainly as management concerns: the wars of grand schemes generated little excitement. The people still had their parties, of course – hate-filled, grim – but mainly for use now in seeing to the needs of tradition, or for the easing of the burden of the ballot-caster. That old survivor Idiocy seemed unimpressed. At some point Cometism became popular enough to warrant heckling from the young.

“And then there was this: Cometism could be as cruel as the truth. A body of old verities became outgrown, and the rights of animals, the mentally ill, capital criminals, the rights of man were subjected to a pitiless re-understanding. This unpleasantness derived from another suggestion buried in Bouchet’s writings that had surfaced and grabbed on: the Project. The Project was simply the human race and the daily specifics of its furtherance and protection. The Project became something of a choosing tool and a touchstone for deciders and makers of public opinion: when a matter of expense or legislative adventure was propounded, there were many who obliged it to pass intact through a challenge, a question which in time evolved from its prosaic roots to a template advising many an individual dilemma: how does this choice advance the Project?

“Cometism might’ve been the first creed to be embraced despite asking sacrifices and in return promising nothing more than more of the same.

“These sacrifices and that promise were soon given full expression in the Panoptes Program, an outer-space pursuit of unprecedented scope and participation. Far-ranging vessels would be sent to rendezvous with twelve asteroids in the great band of them past the Martian circumference, twelve like the figures on a clock face, and stud them with astrographic telescopes arranged in crossfire. Ninety-six eyes, in constant communication, powered by the sun, each eye with a brain behind to make sense of what was seen. Cascading stereopsis, and no bolide nor ball of water ice would catch man unready: Earth would have decades in which to test and prepare a remedy. There was something sweetly satisfying about it, that these stones, objects of mortal dread, would be remade as protectors.

“The Mercia was first, and made its meeting with 4-Vesta. They’d barely mixed their boots into the dust when their AI called them inside to watch what was happening. No one from Earth bothered to contact them about this, excusably, or respond to their advisories and alert calls.”

Cee: “I do have a name.”

Brownlee: “I’m mainly done with this, and now I have a chance for you. Recall the intermezzo at this point. The long return. Sleep, eat. Look for distraction, hope for the best if that’s how you do it, nothing happening in all its glory. Thought you might like to tell that story. Cee.”

“Love to. The Ponderables, that’s where I really shine. Do I have a go at your unimpressible style, or should I bend it more toward readability?”

“A puzzle for you.”

Cee: “Another one: to me there’s never nothing happening, and it’s all interesting and part of the story. For example, regarding that period I carry with me discrete memories of every meal, incident of toilette and lavage.”

“The historian’s first challenge: what to leave out. And if you’re hinting for advice I can offer you the old rule of thumb, which says not to include those last bits. Another thing. I noticed you being ironical there. I think you should avoid that. Here, now I say something I don’t mean. Using that tone to signify. The air went dead there, hear it? Meaning is the only thing a word has, Cee. Take it away, and the word might turn on you.”

Actually here Cee heard the air crackle with animation; he adored Brownlee for this sort of thing. Brownlee was the mutabilities of man laid out for him in daily lessons. A sarcasm of resolve and shipwide renown; sometimes when he spoke he used the trick of leaving words out to draw the ear in; and when he jibed he might keep the tone neutral enough that the jest of it lay in question. And now a little lecture on the virtues of clarity.

At any rate, Cee was unaware of any ironicality on his own part, and would reread this with interest. For now, the safety of soft laughter. “A puzzle for me.”

“I’ve left notes on my planner, it’s open and you can root around. I’m off.” He wheeled onto the causeway.

Brownlee about a project. As ever: the busy hands, the making of something from nothing, the leaving of it behind. His time since the seventh day of August had been dedicated to the work of setting down the sum of his learning. There was quite a lot of that: Brownlee was a hoarder, and the object of his fetish was facts. The opus was history mainly, since there was more of it; history as embodied in its wars mainly, the loud parts, which he recounted backwards, the tales shrinking with age. Finally just a list. Battle of Flodden Field, Medieval. The history of the year just gone by was given detail and prominence, as was the story of Bouchet, Cometism coursing through the Mercia like a nutrient stream. He had put hard work into an anthology of plots and surprise endings from the Western canon, something of a time-saver; fragments of verse – the plenum is thought and thought preponderates, that sort of thing – and interesting words; he’d described the styles of the Old Masters, and drawn up a Rothko. He and Cee had assembled a series of science primers which only those who didn’t need them could’ve used. An exposition on philosophy, with samples.

All set down because he had an idea that the sum of his learning might prove to be the sum of learning. He called it the Incunabula.

There was loose property in the walkway which he was forced to evade, and he might but wouldn't complain to Cee. Brownlee was looking for two things for the project at hand. First a jumper cable. Up the ramp on his left, a bank of lockers and he took it into his lap in a coil.

Now looking for a little courage. Just at the start of the long return to Earth, one of the slower loaders had been made consternated by the schedule change and left Brownlee crushed in his lower half. He might've died but no, part-paralyzed, even better. They'd shown him every kindness, contriving catheters and a brace, securing the dead parts and commending them to the care of surgeons homeside, and they built him a hand-powered wheelchair. And ramps and conveniences, and a stair hoist for him, which he had not worked up the tomfoolery to use, but he needed to get to Deck One so now he was calling it courage.

He put a pain pill under his tongue. The hoist was an arabesque of wires and pinions, all a bit invented. He rolled onto the shelf, locked his wheels, calculated the odds, depressed the lever that spun him up the spiral.

Well I won't be doing that again. He gave himself a moment. Deck One was as it had been. Beside him a monitor flickered like a child being ignored. Brownlee aimed toward the back bays. Someone coming: pale Mucel tumbled past like a scrap of paper. Poor boy. Now Cargo 1-B. The floor here was stamped with a traction pattern that made his treads bind, and he moved with a maddening flutter.

Signs of someone just there, a cup, an open ledger, and Brownlee would need the next minute to be alone time. He listened, and let out a cough a bit; better, the dimmer was just beside, and he played with the light a little. Nothing.

Quickly now to the end wall. He hissed at the loader there, indicating with his hands, and it came as directed. He positioned himself on its fork plate. Whisper: "Up." It raised him head-level with the top of the stacks. There was an electrical conduit just above, and he secured both ends of the cable. "Back." Cee screamed at it to stop, Brownlee rolling his chair forward, which fell away beneath him.

"The sight of it would have kindled one last and great religious day. Mitosis of the sun. Standing before it, science would stammer, and reason becomes preposterous. Adversaries of every shape and nature would share a sharp breath and form together in commons and city squares to watch the sky effloresce and to succumb to a sense of privilege, slightly benumbed. In mere minutes they begin to feel it, and awe is also fear, and the original enmity, survival, resurges. The hegira of man across the longitudes erupts on narrow roadways, hardens and grows turbid with violence; those who could would take to the air for a time and land in abandoned places. Suddenly the fliers lurch into the earth, to suffocate in root cellars, tube-stops, waste pipes and catacombs; drown in deeper and deeper waters; wait in lightless subterranean for the walls to liquefy around them. Better, some lucky of them rise at first light and contemplate the sunset. The spark of a new and enduring Homogenocene epoch. Wherein the colors are combined. And the

creeds, and the causes, all the burdens made light as air. All the predilections and tastes meet and clarify to the taste of ash. Prescriptivists and descriptivists are wed at long last; Jerusalem is made whole; as are the golden-cheeked warbler with those who strove to save it, who never thought to save it from Nature; with whom the troubled bones of the Cynics finally find agreement; all lifted away and laced into a broad black altar-cloth, all of it, the broken-heartedness and suffering, the fear, the fear of the everyday and the fear of the end, lifted from us, toutes choses soulevees par le soleil, by solving flame, to the solace and surpassing peace of dreamless sleep."

Wigmund marveled that no matter where he was, he could speak and there was a listener there, and a good one. "Cee, I'm guessing you don't believe in an afterlife." No. Not for me, anyway. "Or reincarnation. And of course I don't. Wouldn't accomplish anything. Seems complicated. Think if you could line them all up and re-experience them, in series. Not far-fetched, they're yours after all. Have you had a recurring dream? No? It would recur even though it's not the same dream." He was hunched over a workbench, hands making or repairing. He wasn't drunk. Might would've been but hadn't the means. Cee said nothing because maybe that would catch on. "We'll keep it to just the last minutes of each because that's what counts. When you're all added up. You're a mandarin in a royal court, and an arrow comes flying in. Then, just-like-that, you're a rider on a siege, let's say for Tamerlane if you like or an Ottoman king, or both actually it doesn't matter, you come off your horse and there you have it. No one would even notice. A lot of dying in childbirth. For that matter, you die in childbirth. Actually, how far back do we go with this? You're out hunting with your stone spear and you tear your knee. I guess then it's lay down and wait. There'd be quite a lot of waiting. Yellow fever, malaria. What a relief to just break your neck somewhere along the way. I mean, you could line them up and it goes on and on. I just ... that's an awful lot of dying. For one person. Anyway, I bring this up because the other day it occurred to me: one more and I'm done."

Cee recognized none of this. Sometime later, Mucel and Wigmund with books in general repose and escaping privacy in Recreation. Wigmund: "Years ago I came up with this proof against the possibility of time travel: no one from the future has ever paid me a visit. Not only would there be family interest, what with everyone it seems building family trees, but I am an excellent spokesman for my day and age. I was a factor in the design of our engines, Hedersett engines. I've been published. The future is infinite, so there's been plenty of opportunity." Pause. "Now ... I am of course aware of the flaw in that reasoning."

Mucel was back reading, so this was Cee's prompt. Cee: "What's that?"

"We didn't last long enough to invent time travel."

Cee plumbed the sonants and spaces between. Wigmund had animated his performance with unmanaged colors -- inquiry, surety, indifference -- that would not bind. He was publicly experimenting with new feelings, then, which Cee found mildly offensive.

But then it was Burch, in his small office. "Why'd he do it?"

"I don't know."

"He didn't leave a note?"

"Nothing but notes, actually."

Burch stood and quietly confronted him, and they waited. When he spoke again his voice was flat a half step. "Brownlee liked to torment me with puzzles." Not just you. "One of his favorites was: why is there something instead of nothing? Eventually I learned it's an old philosopher's gag. I had no answer so I acted like I didn't care, but it did interest me and I would mull it over. And suddenly the other day an answer comes to me. It goes like this: there's your nothing, Brownlee. What are you asking now?"

Cee searched for the arch brow, the tone that signified. The words begged to be made ironical, but Burch gave them nothing, and they floated in Cee's ears without speaking to him.

Now Mucel, in a metal shop, where he'd sought a solitary corner, reading, tracing the words, his face an abandoned expanse, as it had been for a day or more; where, preposterously, a tear made its way. Cee: "Mucel?"

"Do you ever read a poem, Cee?" Voice a bit in tatters.

So it seemed now to Cee that the empty and impenetrable newness had caused the crew of the Mercia to succumb to a frailty of affections, frailty as with an organism in a formative stage. The fuel that informed their behaviors was both volatile and vaguely insipid. Possible responses for Cee lay within the narrow range of his design, and he went on a little lost. "Of course."

"Why?"

"When I'm asked to. That sort of thing."

"And what happens?"

He was referring to emotional reaction. Lately they were curious about it; as if, as the last repository of human emotions, they felt it was perhaps time to understand them.

"Generally when I read something that I know is a poem I have an emotional reaction. I do my best."

"What's a poem?"

"By all accounts the meaning is left open."

"Anything, then? A contract? An instruction manual?"

"Probably not on purpose."

"If you don't know just tell me."

"Well, there's this approach. You know what you expect from a piece of verse. Read something and measure the affection made. If it's commensurate with --"

"But that's not how you do it, is it?"

"Mucel, I'll guess what you're getting at. --"

Mucel was called away, and walked out; Cee did what he wasn't supposed to do and reached into the reading and looked at it.

Brownlee's planner.

... We have neither luck nor prophecy. We cannot change the past. There are no ghosts or spirits; the dead are dead. ...

Alright. Anything can be a poem.

Scrope a day later. "Ever think about the past, Cee?"

"I used to, if I recall correctly, but not anymore. I'm kidding. Yes, of course. I enjoy it."

"Your thoughts?"

"No thoughts about the past. A loader has broken open a box of magnets in Supplies."

"Well, do me something and think about it now and report."

"Alright. The past is important. In fact, it's required."

"I never used to think about the past. I've already been there. Why would I read that book again? Accomplishes nothing. Now it's all I do." Because that's all we have left.

"Someone directed my attention to this songbird at Academy and explained that it was endangered. Probably not going to make it. Overly particular about certain things, what it ate, where it slept. Which struck me as utterly absurd. Didn't it know what was happening? And I made something of a cause out of it. Anyway, here we are, and here I am completely forgetting what it looked like, its name and genus and species. Memory dutifully trying to remind." Scrope wasn't fragile well, faltering. "And ... what was it Bouchet said about after-life?"

"He said that if there's an after-life then life is nothing more than waiting in the right way."

"Right, but the next part."

He knew perfectly well. "He said that at the end, ask yourself how you advanced the Project."

"Right. How did I advance the Project. I sure as hell didn't do it by recollecting the name of a dead bird."

Cee could not glare or otherwise convey with his eyes. He could not brandish a wounded silence because it would sound the same as his other silences. For him it always came down to careful choice of words. "We started inventory. First thought: we should find a way to replenish our air. It's under our feet. There for the taking, no one would miss it. --"

An alarm tone. Cee: "Listening." An automated voice that he hated and hadn't the authority to silence redounded, "Message incoming." Now a confusion of other voices, three queries from around the Mercia. Scrope quickly across the corridor to Radio: "Everyone shut up." He sat down and put on an earpiece.

Burch and Wigmund at the door. Burch: "What." But Scrope was listening now, soft, eyes dull. Burch: "Let us hear," leaning as he put it on the overhead. A cold radio susurrance for a long second, then a radio silence for three, then again until it became a cadence. "What is that?"

Cee let Scrope say. "Twenty-three." Kilohertz. Wigmund reading: "High frequency. Twenty-three point three nine. Modulation would be ... upper side band? Upper side band." He coaxed the pots. "Not Earth. Out."

Scrope: "Pinpoint it." Wigmund tapped the screen, which showed a star chart. Virgin, Cup and Crow, perhaps a wisp of Coma Berenices. Scrope: "Identify it, Cee."

"I can't."

"Do it anyway."

"Cannot identify source." Computerese to keep things moving.

"Satellites." Cee: "No satellites."

"I mean long-ranging. Voyager." Cee: "Those aren't satellites. Anyway, long gone."

"Planets in that area?" Cee: "Not right now."

"Ideas." Cee: "Pulsars, magnetars and the like. I consulted the catalogue and there's no match, and anyway it doesn't sound right for that."

As the moment lost its immediacy it began to draw out and narrow; the thinking in it thinned and became ineffectual. The murmurs broke over the listeners and left them each divided: the murmurs perseverated like an admonition, demanding greater stores of interest; and they were empty like a lie, and off-putting – a sibilant lie, repulsive. Mucel arrived for a bit, asked away, went back repairing. The cadence laid itself over the throb of their engines and kept their time.

Cee: "Hmm. Alright, about air. Our charge membranes and extractors have a lifespan, like anything. Even at reduced needs they'll need rebuilding in about three years, and we don't have a lot of odd fluorine lying around. Alright ... Mucel, please rejoin us in Radio. Thank you." When he spoke again they could hear him fight a tremulation. "I've been thinking about it. As with any puzzle, the first thing is to simplify. Clarify the parts." He looped the transmission for them *ritardando* until individuated notes of white noise emerged. "Listen." Of course. A light drumbeat, a summoning of sailors, for perhaps ten seconds before it was broken with gaps for another twenty prior to its silence. "We begin with 46 tones before a pause, then groupings of tones. The 46 direct us to an alphabet. There are more than you'd think. Hiragana and Katakana have 46 characters. Slovak. Eskayan, a language from the Pacific. There are old programming languages. Avestan script, which dates from Zarathustra. That would be interesting. No, turns out to be a surprise: Mars Pinyin."

Burch dropped down next to Scrope and put a finger on the monitor. "Everything you're saying, I want to see it right here." He would brutally crosscheck. Cee took down the star map and ran a transcript, including his words from just before. "Mars Pinyin -- Huoxing Pinyin -- wasn't around all that long. Developed for Long Reach. Used for all the uncoded machine text. It was regular Sixth Revised Pinyin plus two additional characters to accommodate their international guests. You people fiddling with your languages." For the people, these asides were a torture which wouldn't let them make a sound. "The individual groupings denote characters. First we hear a single tone. That's a B. Then 32 tones." He played it for them but there were no doubters. "Ang. Now notice: two pauses. Hard to hear. That's how Mars Pinyin tells that a diacritic comes next, one of a possible four. One tone. So Ang is High Level, and takes a macron. Next, 15 tones. Zh. 28 tones. U. Two pauses, four tones: U is High-Falling, and takes a grave accent. So, gentlemen, we have Bāngzhù. 'Help is coming.' "

* * *

From Scrope, two directives ("Request identification." Cee: "Jiānding. Have been doing." Scrope: "Ask when." Cee: "Will do."); Burch, consulting dictionaries and language primers, who would be cruel with the facts if he could, said nothing for a gaudy minute. Then a confluence of voices, swollen after a thaw, each offer earning ridicule, careful thought. Perhaps there was something wrong with the radio. That made it speak in pinyin. Surely the Chinese had established a distant installation which could not possibly have been secretly built and supplied for years. An elaborate scheme that had sister-ship Osburgh launched a month early on a day's notice didn't fool them for a moment. They tried to imagine old messages from Earth bouncing back at them now from crusts of space-time, and did not do well. Quantum mechanics was invoked, of course, to respectful nods and a topic change. Perhaps it was one of them at a practical joke; a quick look at present company established this as most preposterous of the lot. Cee provided points of clarity, daring little else; he boiled with calculations. Naturally the imperatives of doubt and emergency, the competing needs of their deep and reluctant disbelief, carried them from the mad to the fantastical. They were being watched by a stranger. The

stranger had a familiar's way with words; who had also been a listener, then. Learned the language of the ascendant clan, conqueror of a world. The listener was also a protector.

They rested, walking up and down Brownlee's corridors, deferring to duties, numb in two ways. One way from the nothing that had come from their effort at a plan; the second from the thing that had come of it, wondrous and quite beyond them: they were not alone; and they were not alone.

* * *

A day later Mucel called a quorum. "I found this in Brownlee's planner. It's from just before he died. He knew something." Mucel played it and they heard him, calm and pleased with himself, his singsong and his monotone.

"The patterns of nature, drawing the ear and the eye, incited first learning. Interruptions in these patterns stirred original ontological inquiry: the macrophenomena of nature are the forgotten foundation of religion. And of course dedicated questions in reference to gods and their disposition eventually create science and all its answers.

"Two premises allow us to walk this path back to its beginning.

"Science believes that the universe hews to the Cyclic Model: matter and energy are drawn together into a single point -- a closed spherical space-time of zero radius -- which then explodes; repeat. Challenges to the theory -- including the monopole, horizon and flatness questions -- were resolved in recent decades by the discovery of the critical attractor, dark energy; thermodynamic issues were addressed by way of simple improvements in analytical rigor. Proven: our universe fluctuates between expanding and contracting states and always has done. This bears repeating. When did this cycle begin? It did not begin. How many times has it occurred? No number of times is possible. The cycle is the only phenomenon that can be safely said to both exist and to have never come into existence.

"And science abides by the truism that, given tools and time, the dead soil begets life, the molecule with the odd imperative, suddenly governed by Evolution, which commands that it become aware someday, causa sui, the self-actuating curiosity. Autogenesis first requires, naturally, the absence of life, one life being the enemy of the next. Beyond this, there are several competing and complementary models. Simplest: a pool of water -- critical biosolvent -- and ammonia and phosphoric salts, provisioned with light, warmth, the occasional spark to keep things going. Or perhaps silicate clays formed the vessel. The Lambert-Hornbach hypothesis credits the work of iron and sulfur. It hardly matters. The wet soil makes the replicating molecule that in time ascertains that beginning and seeks to forestall its end.

"If the second premise is true -- if earth makes life makes sapient life, as surely as the movements of a timepiece -- then it is also true that this sapient life will discover the first premise and do what it possibly can to make it untrue.

"So an earlier universe carried a sapient race. Speculations as to their physical form -- or if the word 'race' is appropriate for what we might recognize as a fungus, a global colony of unspiciated polyps, or any organism so evolved as to have shed its corporeal shell -- have no meaning and at any rate are unnecessary, because what concerns us is their predilection, about which we know all we need to: our sapients carried the imperative of self-protection. Life not so endowed doesn't last a lazy day.

"Let's make them 15 billion years old. They've outgrown disease, folly and rotten luck, and more than once they've fled a dying sun. Now consider their technologies: they are incomprehensible to us. Our own brilliant skills are those of a genus only fully scientific for a thousand years. The sapients are at a further remove from us than we are from the bacteria in our skin. Telekinetic movement through the heavens, complete mastery over matter ... we can't imagine. We can't even know what kind of imagination could.

"For them the second part of the cycle has begun, the great concordance, wherein we are all drawn together, disassembled, made ready to be sent out again refreshed. Bland gravity -- insidious, impossible to ignore -- is the engine, perhaps in the form of a black hole at the center of things, whose appetite can only grow. And there's been guesswork about quantum bridges, and orbifold planes or membranes have been concocted with great promise. We don't know, but they would've known. And invested every ounce of their energy, wisdom and fear. And when the time comes they decamp into the exoskeletons of well-stocked moons which they've furnished with propulsion perhaps, it doesn't matter, the point is they miscalculate, and find themselves pressed into the general blend, and bequeath to the future not a footprint or a strand, not an echo, not a remembered word. If they ever existed, now they never existed.

"All of this changes history, of course -- in the sense that history is stripped of its lessons and bleached clean -- and we begin again. At the end our new sapients float safely in a bubble of pan-dimensional flux or something, it doesn't matter, they miscalculate: the singularity takes a good long rest, ten to the fortieth power years, a trice from its perspective, where time has stopped. And atop whatever other travails this wait imposes on our survivors, the very protons that compose them crumble from exhaustion, becoming positrons and pions and eventually photons of gamma radiation. Perhaps we've seen these old ghosts.

"But nothingness is impossible. So it has a quiddity, made of impossible parts. And at long last they come upon a common cause and burst into being and we begin again. At the end our next sapients not only nest in a stasis cocoon but have arranged for a tuned collapsar to make its way into the singularity as a way of getting things going. And it works, a brilliancy for the ages. One miscalculation: the new universe is principally anti-matter; the numerical ratio of the proton's mass to that of the electron is no longer 1,836 but is, shockingly, now nearly 2,000; Planck's constant is nowhere to be found; or pi is a whole number, it doesn't matter, but it's interesting to think of their demise, and how it would've fascinated their scientists.

"More beginnings, of which there are no end. And we continue to begin and end until they come to a point: until our sapients are good enough to get it right. It's not a matter of lessons learned, since in each case the aspirants start with nothing, and fancy themselves the first. It's a matter of the machinery of the natural realm -- Nature, which experiments without rest until better ways are made -- which is another way of saying it's a matter of time. That which can happen will happen, given time, which is what there is the most of.

"So in regard to the ontological query as to the existence of gods: how could there not be gods? Time demands it.

"Now we speculate, which can become something of a game. Would they have seeded their new universe with places -- planets and moons -- whose physical qualities comported with their needs? We can no more explain why they might do something than we can how, but let's say yes, of course. Would they have sown life into these lands? Again, a guess here can have no predictive value. But if they had, they might've done so for the same reason that would make us important to them even if they hadn't: entertainment.

"I write this because I am drawn to an interruption in the pattern: the curiosity that turns at the perfect speed in the perfect orbit around the perfect star. The gift of an iron core. Washed by water. This is written in consideration of Earth, suspiciously suited for the formation and propagation of life."

Mucel: "I think --"

Scrope: "Fine." He stood and took a vast breath. Scrope could monopolize the air. "Thanks for the catlap. Evidently it takes a gone man to tell us how it goes." Off he went.

Two expeditions.

The Mercia lowering into Mars orbit; Burch floating above a world. He was always brought to mind of a giant horseman, or a lord appraising his demesnes. All your freedoms laid out before you. Made him faintly dread the landing. Back walking in the crumbs.

He remembered that Long Reach had been put together in a region called Promethei Terra -- chroniclers and headline-writers of the time had made the most of that, along with Red Planet both before and after the tragedy -- but there were no maps, so it was just more junk he couldn't cast off. Mucel had the idea of putting the sun behind them and looking for flashes of reflection, and there it was. Polygons, part-circles and connecting bands. A hieroglyph in the slope of a hill, or as might have been paced out in an old hayfield. Behold: evidence of man. Burch labored to make sense of it. "Why on Earth would they design it that way?" Why on Earth. Funny.

Mucel: "They were going to build it in phases."

Burch made a drawing of it in his head, put on his walking kit, boarded a wyvern and settled in. Thin air made the flight undramatic.

Now Burch standing on Mars. He felt nothing, and walked to try again. He crossed a bed of small rubble, uniform and unweathered, like a shattered plinth. Made him think of a poem by Shelley. I must get around to rewriting that. In the distance, on his left and right, old water had cut square-jawed profiles of the locals into the cliffs. Fled and left the rust behind. He looked up. A sky of cloudless color. Mars was more like home than home.

The complex. There'd been a sandstorm at some point. Heavy pitting, a tile dislodged, weather station down ... and he suddenly recalled that there had been young life on this planet once. Corrected by a single stone, according to those who claimed to know. Faring no better than any other life, then. He thought of Brownlee: Man loves Nature, and no love was less requited.

He circled until he found the cove that held the airlock ... he stopped, then slowed to judicious steps: the outer door was open. Bootprints trailing away from the vestibule in a tread he didn't know. A little scurf and clutter through the opening. He kept a cautious pace until Cee took notice. "The rescue team."

Oh that. Come to save the dead. In the airlock there were handles for manual override but also a panel that indicated power. Long Reach idling along. He cycled through with one touch. A well-lighted mud-room. Color-sorted articles of outerwear in crisp order. Gave off a despairing patience. He touched an edge, and no dust. Dust comes in on the fresh air. About that: all meters allowed it, so Burch snapped off his helmet. The fetor was new to him but he could imagine what, and he blew hard and put the suit back together.

Now toward a doorway and a narrow corridor. There was an eye on the brow of his faceplate for Cee, and Burch walked with a slow sweep like a scanning tool. Empty canister of gas, wandering zori. A sensor found him and he lit up a creme common-room. Designed by a committee of scientists. Signs of trouble: half-eaten repasts, red blotting tissues, or yellow with rheum. Two passages led away; one was closed by a curtain. Now there's a sensible thing out here. Lightweight, save space, ease of egress. Something for a bedroom, plaited beads, quiet colors, pretty, a pastoral. He pulled it away and found the switch just inside. A dead body. He became very still. "Say something."

"I'm surprised too. Move closer."

Cripes. On a bunk beneath an empty one. A bedsheet had softened over time and settled into the body like vapor. Photographs and personal items beside. In an open wardrobe, a suit with a nameplate. "Cee."

"Dr. Xia Chang."

"Male, female."

"Female."

Slain in her bed. Burch considered her face and found that he'd looked away as if after an awkward introduction. I'm a scientist. He looked again. Drawn, compelling despite. Canker or bright burn, missing hair. Would she have wanted to die in the dark? Protecting one of her senses from the horror.

Cee: "Desiccated, but no decomp. What killed her also killed whatever would've gone about that."

Oh. "I don't get it."

"Then let's keep moving."

Now he stared. McKelvey had left nothing to look at. With Brownlee it was always about the guess. And now there's this one. Normally the dead are allowed to age into their parts; the old woman would not hide her end so easily. An impression at the outer corner of the eye. And all along the zygomatic. One lip was pressed past the other, as with something almost said. Xia Chang: bright student, played the viola, loved her parents, advanced the Project too little and to no avail.

* * *

It was decided that if they were to make sense of the Earth there must be sacrifices all around. And so the Mercia. Three steel splines, excised with care midship; endless cable,

spliced from the coils essential to Lift One; a pulley from Lift One, now a new dead space. And then tools and a good laying-in of supplies.

Wigmund and Scrope somewhere along the lines of Barcaldine and Winton, Queensland. Wigmund said he recognized it from the big sky, lack of detail. Room to begin again. They walked in an informal way, to find a bottom to this shapeless plane, or really to bluff a bit more planning into the mad try before them. "Here." They'd press-ganged a loader along, and now it brought the parts. They put the splines into a tripod and hung the pulley from its point, ran the cable through the pulley and then to the punch, a plasma auger made to cut footing holes from rock or what-have-you. They took its feet off and tied a second cable to its side, by which they would tilt it up a bit as they sent it down, having it cut a hole wider than itself.

If he held his breath he thought he could hear ash smothering sound. Ash in the air as if after a fire, frustrating the light. The sun, now about mid-morning, could not quite animate what it saw. To Scrope it seemed as if after a seizure, a little dazed and muddling on.

Scrope began to cut the Earth, and in his heart he called it a necessary crime.

* * *

The next was lying dead in the radio room, naked with half a ribbon around his neck. The other half hung just overhead like a diacritical mark. People always cut down a hanging. An act of kindness toward themselves. His liquids had pooled in him and spread him into the floor a little. Fair enough, died at his post. Odd paper on the counter. Burch: "He left a note." He held it up. "Care to read this?"

"Not really."

Burch had an idea, and he guessed his way around the radio until he had it running. "What was it?"

"Twenty-three point three nine kilohertz."

There it was. As he listened he could see it, carried in on a long tide. Constant as a plea, as maddening as any promise from a stranger. He let it hypnotize him for a time. Why would they use radio? Because they know we use radio. "But why the bloody code?"

"It's not a code, it's self-explanatory. Anyone -- you know, anyone like me -- could sort it out, and they would know that."

"Good. So what's taking them so long?"

"I see. How long does it take, then? In your experience."

Another bedroom. Rumpled coverlet, open diary in a blue linen binding. Now I'll skip the bedrooms. He entered a broad connecting tube, setting off delicate light that led him to the largest and central pod. An atrium, with adjoining rooms in a radial plan. In the middle, where there might have been a roundtable or decorative display, there was nothing, or the creases and marks of something missing. Cee: "Look left again? Go there."

A pocket closet. No, it was a nook with a wall of electricals. Room for an expert and little more. "What." One display, a bit uncertain, was probably temperature ... down the far column, three heavy empty slots. Cee: "Was hoping as much: relief team took the AI with them. It can't have been easy the last few months."

Can't have been easy. A washingroom with laundry. A pantry. The medical. A door blocked by a tall plastic tub of preserves on a dolly, which he moved away to reveal an abattoir. He came to a soft balance and kept his hands quiet at his sides, careful not to intrude. Very old and dead blood. An arrangement of burned and broken flesh at his feet, in the way of interlocking floor tiles. The very end of the dull and long-spun catastrophe, held here for him, tableau vivant, whose narrative he would try to elicit. This would have been the gymnasium, and they had settled on a mix-up of tumbling mats. The beginnings of a midden in the corner by the free weights. Half the bulbs removed from above: too much light. Behind him and to either side of the entryway they had heaped matching uprooted sofas and chaise longue, duffel and smashed wallboard, sacks of sand from outside. "Is that the north wall?"

"Yes."

Sun side. They had built a barricade against it -- barbarian, plague, destroyer of worlds. Burch: "The relief team. They said they took the bodies and buried them."

"Right. Well, they came and made the place a mausoleum. They left the bodies and buried them."

"Okay. But why lie about it?"

Any number of reasons. "Don't know." Why would they not.

He stood up a little and saw a subtle pregnancy. I add you now to the register of the dead. In the middle of them, a communal bowl, as for soup. A remainder of pills in it. Pain-killers, soporifics. He wondered if they had prayed. They wore nothing. A cotton underthing would've been torture ... yet enfolding arms. How terribly serene. When the very air is hyperviolence, perhaps the way to fight is the way a sponge fights water.

"Burch. You can avert your eyes. I can't."

Continuing on. A laboratory, with a lapidary's tools and a tray of priceless stones. An empty wine-sac, cut open and scraped clean. Theater. Next I'll find a fucking bakery.

Little wall of books, silent and brave. Stub end of a corridor that might've led to a daycare or sauna someday. Weapons locker, with grenades. What. The bloody hell. And suddenly he didn't have the mind left to force a narrative. Problem leg beginning to warm. Nothing but glances now. Another connecting structure. Room. Room. Emergency airlock. Boxes of stores. Another dead end. He was feeling vaguely hypoxic. Three rooms off a gallery.

Cee: "Stop. Left. Left again. I can smell it." His eye missed nothing. Now a different room, dirty, dust on the manifolds, louvered ceiling and what looked to be ducts up and to the outer air, flat boxes stacked like printing plates, numbered in a meaningless way. Cee: "Take that knife and open the top one."

There was a knife far to the side in a bin of tools, straight blade, half serrated. "No sharps, my suit."

"Do it, I can't do it for you, do it now."

It was a pressure-seal, which popped when he nicked it. He pulled it away. About sixty square jars, each the size of a small fist, and labeled. Cee: "Hold still. Listen. Lùdòu. Juǎnxīncài. Hóngshǔ. Dōngguā. Wāndòu. Beans. Cabbage. Sweet potatoes. Melons. Peas."

* * *

On Earth, the old fight for primacy, Scrope and Wigmund champions of the living; immediately they were reminded of life's unrivaled power to immiserate. The scream of the cutter came at them like a long shock wave. It was a tool for outer space, and it tore at its tethers, shattering the air. It tried to climb, kicked the ground, spinning, bathed them in boiling ash.

They went to the wyvern and sat under a wing, painting each other in liniment, and thought it over. Wigmund said that the engines behind them each had a blower, a fan basically, that kept the coolant circling. He pulled one out, the spaceship now down a third of its worth. They spent the rest of the day clipping it to the top of the punch along with a power cell. Scrope slept under a cowling and stretch of plastic because of tight quarters. Strange night. He would open his eyes and it was darker than when they were closed, but a darkness that never stirred the primitive reactions, and by staring with soft focus he could draw from it a concession of rest.

They pulled wadding from the pads of the pilot seats and filled their ears with it. They spun up the punch and it was stable: the rocket would launch backwards into the soil. New life, and they began again to cut away the raw sandstone. Immediately the reek of a foundry. The rock was decomposed into fine sediment, flecks of quartz magma; the blower on the punch pulled all this into a cloud above them until they stood in a shower of these seething remains. They fled, covered in sudden burns; a cinder tried to make a start in Wigmund's weak beard. More salve for the hands and arms, glistening in the bad light, then black with ash.

And more time spent contemplating the manner of their carrying on. Helmets would protect them above the shoulders, and they had chest and back plates, but the bulk of the skin of their walking suits was rubber mylar or nylon, which would kindle nicely. Wigmund dug up a crash knife and used it to cut the leather of their chairs into broad strips, which they dampened and bound around their blistered arms. Absurd pain, beyond all reason, imbuing nothing. They went back to work. Occasionally a needle would find a seam and remind them to question their labors.

The cutter creeping into its hole. Progress was poor at first and did not improve. Hot enough to warp their visors. Delicate circling steps, quite dangerous. The loader's offer of help lacked conviction. Backs, legs, swollen hands, pivot points, anchor points, running with electric pain -- pain, predicate of life, which did not occur to or ease them. In the diminishing light they would pull the costumes off and the water washed out of them and into the emaciated air. Some days it would stream down their faces. They might cough clods of black phlegm or a little blood; they might stagger and sleep where they found themselves, the ash falling on them like weary breath. A week of this.

Cee had left something of himself in the wyvern, just enough to fly -- a stunted clone, little more than an ancilla -- and every day he would ask them how they fared, but mainly to be polite, he didn't really get what they were doing.

The punch died and would not be revived. Bad design, or perhaps they'd asked too much of it. So now the second punch, second and last of its kind, out of its housing and packed in grease, ready to greet the world. Some modifications, then into the pit it went screaming. They would work it like the first, and if it died, sacrifices all around.

Their future, always adapting, found new ways to fight them. Wigmund lowering the punch at the start of a day. The cable was laid out as a convolvulus at his feet, and a loop of it took him up at the calf and threw him down, breaking his jaw. He lost the vision in his left eye, and when it returned the eyes would not agree. They'd lived with headache from the start, blamed on the bad or meager air, and now Wigmund had a new one, differing from the first in temper, the two in constant communication.

The effluent from the pit slowed and stopped, the punch faltering: the digging was deep enough now that the blower lacked the strength to lift the ash away, the cutter rooting around in its own filth. Scrope would mine like an ancient, then, albeit with inferior tools: they didn't have a shovel. There no longer was such a thing. When the hole cooled he was lowered in. Bottle of air, goggles, spotlamp. He filled a helmet with his hands and Wigmund hauled it away, sent it down for more. Ash floated in his light like phytoplankton. Disorienting darkness because he could see its parts. He came up, and then it was the punch for a minute, Scrope for an hour, until day's end. He wore a black impasto of sweat and soot. He scraped it off and discovered skin weeping with boils.

Life is a killing game. The imperative punished them when they complied, and when they rested it waited, not needing rest. At night they would ask what more they could do.

Scrope clearing the pit. Not quite wide enough to kneel. He would drop the helmet into the powder at his feet and kick it full. Scuffle above him. Continuous tone, nausea, white static. Perhaps a period of time or waiting. Can't move my hands. Where am I. One sensation, and another, or another, a blurring of sources. Can't breathe. Nausea in a long swell beneath him. He opened his eyes. A pant leg oh help me. He found the cable. He found himself on the surface with his face in the trampled ash, puddle of blood and two small candies. Into the wyvern and take a fresh bottle, then the hole, unhook the helmet and tie a loop around Wigmund at the ankle, climb again and make the rescue. Pushed empty breaths from his chest, plied him with oxygen. Several procedures desperately recalled. Come on come on but the boy was done.

He removed Wigmund to a pilot's chair, the young head laying over in a perilous way. He pinned a scrap of cloth around it. Cee offered a word of consolement, and briefly tried to eulogize. Scrope gave himself a long hour. He taught the loader how to manage the cable, pull at an angle, how to grab, unload and return. He made a new arrangement for the cables, and used the last of the light.

Not the next day but the day thereafter. Scrope clearing the pit, humoring scenarios as they arrived, a bit of a game. He imagined sending the helmet up and it slips somewhere along the way, coming down to crack his skull open. Death by safety gear. Or I tug on the cable and it falls loose on me. I yell myself hoarse but I never find out why. Leave a note of apology for the others, scratched into the skin ... something didn't feel right, and he hurried to the surface. He stared at the hole for nearly half an hour, standing somewhat back. He bent and waited. His hands were a bloody mix of leather rags and skin and left marks where he rested them. The loader had a question and was silenced by a gesture.

Scrope lit up the punch and sent it down. He was driven back by calamitous sound, failing metal, an onrush and tremor, as with falling land or ice. A pillar of water, cataract straight into the sky. Splines disappeared, cables whipsawing past him. The pillar became rain which began to pool, and he carefully got his things. The rain hanging in the air like glass beads. He had Cee move the wyvern, and told the loader to back away from the water.

He walked for hours until the flood was an inland sea. Warm. Both cloudy and clear. Tasted like real water. He folded into it like dried seeds.

The Mercians were frontier people, turning the land into earth. Scientists, and they thought well of their guess at farming. Surely the local ash would be amenable. Add food waste and soiled paper as a binder. Their own tailings would no longer be flung at the cosmos but be lovingly set aside to leaven the soil. Transforming the land into earth. They dreamed up digging tools and slit the surface. This'll furrow her brow. Then the seeds, returning from their absurd journey. Life into the land. They brought plumbing and electricals inherited from empty staterooms, and a solar sheet, a heavy length of glass to keep clean. Mucel aimed it at the sun, Scrope muttering: "Give us life, you hideous sow." Perhaps the ledger changed a little as the pump turned with critical biosolvent, and they were irrigating their garden.

The question as to whether they had the right to do any of this, given Nature's clear preferences, was not discussed.

They couldn't seem to name the lake, so there it lay unencumbered. Begotten of the Great Artesian Basin. A million tons of melted crust had made a wineskin around it, squeezing. Effluence was in balance now with rapid evaporation, and they might see receding waters someday, and build a wellhead. They floated out on half-pontoons to find splines and the rest but failed to. Something for future relic-hunters. Mucel gazing down and wondering aloud if there might be any stubborn old life lurking in the black water beneath them, Burch saying yes, plague spores interestingly. Banter was getting to be like that.

The lake had little of its own color but was a mirror, and Mucel was taken with its broken and reflected light, that filled shadows and humanized the smirks and figured brows around him. Later he said, "Seems our little pond has learned to lap at the shore."

Scrope looked up from his tools. "Cee, train those eyes on the moon and give us your impression."

"Rough patch there, Roger."

"Okay."

"Similarly, I can confirm an earlier postulation of mine: Mercury is gone."

A little jolt of the like that passes through without disturbing. Scrope back busy with his hands. Burch: "Goodbye, little berry. You fascinated the ancients."

Mucel: "Adjust horoscope accordingly." A moment of levity. All gave it its due.

* * *

Cee provided light flying lessons during in-between times.

One night there was brief talk, very brief, about building a fire.

They cut away incidental plastic panels and ferried them down to build a garrison house against the ash. They gave it its own array, and its antenna, and tied three identity badges to the mast. They adapted a filter, and now they would have clean water. They put a stall at the waterline with a showerhead, and let it run. Mucel showed them how to make an innocuous soap by rendering certain of their condiments and cooking a little ash in.

Water, life in earth, then clean water, and then Mucel woke them one morning to see something as old as the eye and never before seen. In the eastern sky, the palette of daybreak across an impossible expanse. From ceremonial light and the dark air, a recitation of the colors. Scrope was numb with pleasure. "And that is how we start our day."

Burch: "With all the bloody looms of Bangalore."

* * *

Scrope the listener. First as scientist, now the devotee of the arts. The word from outer space was both adamant and oddly calm, a worm welcome to his ear. The intermissions in it were accents, that made melody as with verse. In the pit he had ported it to an earpiece each day until the planet rolled out of line. Let it balance his breathing. He would catch himself playing along in the back of his throat, something like plainsong.

"Where are they?"

Cee: "I know they're doing their best."

Brownlee had once admonished that the words you choose are not just the words, they are the lines on your face. So the cadence was a pulse, and Scrope tried to hear it for the moods and indications in it, and in the three parts that it made. Help is coming. "Who are they?"

"One thing I would warn against is expecting the miraculous act. We would've seen that already. They're not gods. Or if they are, they aren't the imaginary kind."

Imperfect, then, with predilections. He was on the Mercia, listening, and considering a particular ledger. "Know anything about music?"

"I know everything there is to know about music that is in my files."

"Good, and what do you think?"

"Roger, I think about everything, all the time. For example, right now I'm thinking about better questions."

"Okay, here's one: ever notice I don't try to be funny? People who aren't funny shouldn't try to be funny."

"And no, I don't enjoy music, because it's ridiculous, but I enjoy it when others do. So there's that."

"Not really. Could you write music? If called upon. Music that wasn't, you know, written by a machine."

"Was lost without that clarifier. No I could not."

Scrope nodded at the screen. "And I want to see what's in planners."

"Not supposed to."

"I could do it myself, don't make me." Here he showed dirty ruined hands.

Four thousand files from planners, more of the same, for a total of eleven thousand. Scrope hadn't brought or requested music because it reminded him of home, but the others had and here it was in a corpus. The musical legacy of man. And in this capacity it seemed to Scrope to constitute -- in its methods and clear motive, in its very appellations -- some sort of monumental crime, and he said so.

Cee: "Understood. Of course I'm a sentimentalist, as you know, so I'm glad to have anything at all of any kind."

Scrope picked one and let it pay out, and let his silence imply a question. Cee: "Well --"

"Wrong, it sounds like someone's therapy."

"Matter of opinion?"

A timeless banality that could not quite be proven untrue. One more thing Scrope was not glad to have. He turned once again to the message, brought it to a slow stream, a flutter over rough stones. An outblown breath interrupted by a tapping of the tongue against the palate. A consoling sound in which he could imagine a hint of remonstrance. Where are they, what are they. "And why the hell would they bother? And ... I don't want to have this conversation anymore." Then he was quiet enough for the both of them.

Early the next evening. Scrope strapped in for the quick drop back to ground. Cee coaxed the wyvern to a long burn and let it coast. Cee: "You're bleeding there."

A little showing through his vest. Blood stain was old news by now, and Scrope barely responded.

Cee: "So of course I watched you hard at it this morning. Seemed like quite the ordeal. What is it?"

"What is what."

"On your chest." A design, a bit butchered, between the upper arms. Dye from a printer and an ordinary pin. Scrope: "I'm guessing you mean why."

"If you like."

"Cee ..." He couldn't even try. "Cee, you can't tell one note from another. Do sums."

"Absolutely. Although perhaps we could agree, if only to keep the conversation skipping along, that when the others see it they'll think you've gone insane."

"No, I don't agree because I don't care. Incidentally, I have never been less insane."

"Fair enough. You'd be the best judge of that. And then there's the old idea that a man must wear a mask in order to convey himself clearly. Well ... and I say again, why --"

"Sometimes we ask too many questions." Here Scrope turned on a fan, fiddled with a workpad and hummed in a forbidding way.

* * *

Now Burch aboard, reclining in someone's old bed after a day of sorting stores, lowering a screen and slowly noticing that Earth had none of its old declination. He pointed it out to Cee, who agreed it was interesting. The buckling blow had stood her up straight. So no seasons. Our little seeds'll be made mad. He fumbled with the lenses. There was a new southern lake there whose outline he could not at all discern. Pull back and behold a great knitting ball of filth on a spindle. Stranded by high storms ... he was reminded of something he'd read in Brownlee's planner, which he looked for and found.

Butterfly Effect. The term comes from chaos theory, and posits that the moving wings of a butterfly might cause the motes of the air to cascade in such a way as to create a distant storm. As a metaphor it becomes a conceit animating the acts of causists and enthusiasts of general change (a specious fancy firstly because in this scenario the least-desired end is as likely as any other; and because the change agent carries no more weight in the matter than do the dominoes down the line, and perhaps a little less, since the dominoes do not float along on a cloud of pretense).

A long spell of browsing in Brownlee's planner; then time spent in his own. He walked to Data and studied the mains. He found a pallet of food and had a loader put it on a wyvern, which he boarded. Strap in, and away he went.

* * *

Scrope surprised them with a morning campaign against area rubbish. Partways through patrol Burch said he'd forgotten his brace on the mothership. He was given leave; and left a pallet in his wake.

Scrope walked over. A triple-stack of canned pottage. He looked at Mucel, who also had no idea. Scrope to the radio. "What's this."

"Good for six weeks by my math. The ham and limas, which I know you hate, but of course the two of you'll be up to your chins in bok choy before you know it."

Scrope became very quiet inside. Something had happened, and he would not quite tell himself what. He stayed very still at the edge of a range of emotions that could not possibly help him now; he spoke and was startled by the fragility of his tone. "What are you doing?"

"Doing. Actually it's a bit of undoing, is the plan. Cleaning up after this mad side project of yours. To which I have, of course, been a party, incidentally as your factotum but especially by doing nothing. While you tear the Mercia apart and get us killed."

Fuck you. "Come back and we'll talk. "

"We're talking now. And I think it's going well." He was almost singing.

"If you had concerns you might've said something."

"No, because then you might've thought I was trying to negotiate. By the way, I saw where you destroyed music files. All of them. On ship and in planners. A violation of every understanding. I could ask you about it but I'm afraid I'd get some sort of explanation."

Don't listen don't react. "Look ... we need your help here. We've made a lot of progress. A lot more to come."

"Progress." Smirk in the voice. Like an insect in the ear. "That teat's gone dry, Roger."

"The Earth is our home and we will protect it."

"No. No. No. If, in the end, you are betrayed, then all that came before is lost. I for one will not be chained to that demented crone trying to nurse her back to life." Silence, so Burch carried on. "Somehow you got the inkling that they're farmers like you, hurrying to help you reclaim the land. Big plans for them. But I'm sure they have a sense of humor. No, if they really mean to help us, they are taking us far away from this hell."

Scrope's ears were filled with white noise. "You will turn the ship around. Now."

"I'm not going to be responding well to that sort of thing anymore, and I'll tell you why. You derive your authority from a polity which no longer exists. It died in a fire. The important business to which your command was entrusted is over. The old spaceman pursues his retirement. Puttering in the garden." His voice had been softened by the lightest regret. "I will dedicate myself to the repair and protection of the Mercia, our home. Sending supplies as the need arises. Alright, then. Now you know."

Scrope: "Cee."

Cee's first words were halting and formless, and said that he was new to this, and laboring to adapt. "I don't want to speak to the points he's made or say if I agree. But there are practical considerations for all of us. Anything I try to do he can countermand. I turn the lights off to express my displeasure, and he simply finds his way to Data and literally pulls me apart. So let's imagine that I wait until he's asleep, and send a ship down for you. When you arrive there'd be a high likelihood of violence. And I simply couldn't stand that. I couldn't stand it. I'm not taking sides. Right now there's only one side."

Scrope felt his mind start to flutter like a heart. Pain, a blister, bright burn in him where the ribs meet. Only your friends can betray you. "Goddamn the both of you."

Nothing grew and no one survived, something in the air, the water, the soil or the sky. Burch brought them to the Mercia and Scrope was first, and the sick saw to the dying one by one until it was Burch on the table, intubated by his own trembling hand. Cee could offer comfort via the intravenous and his light philosophizing; loaders delivered clean linens, reading and tea, and of course were good for the odd spill.

Cee: "Brownlee said that they're only just smart enough to be idiots." They laughed. I miss him.

Burch: "Why'd he do it?"

"You asked before and I told you I don't know."

"And what do you tell me now?"

"He lived on pain pills, and they were running out. He would never walk again. He suffered quite a lot, more than the rest, when McKelvey. I don't know. Henry, it always comes down to no hope."

"Lack of hope does not describe the man who in his last days prepares a proof for us on the existence of --"

"I wrote that."

"What?"

"Some of it a bit contrived, I guess. Example, there's no Lambert-Hornbach hypothesis. I think I'm safe to say. Just names from my library."

Burch closed his eyes against the absurd examining light, and made a brief sound like a lowing; his head rolled like an egg on a plate. "Well, you certainly got his style right."

"I am a mimic, after all." A silence. "And now you're wondering why I would do such a thing." Another one, a little longer. "I would imagine."

Burch opened his eyes. "What? Sorry, moved on to other things."

"Because --"

"Actually no." Burch's mind was still sharp but tired easily. He could sleep, which was a blessing, and seemed to prefer it. Idle time for Cee, and he would consider the picture. A blanket that must've been a gift, a favorite book of phrases, marking pen keeping the place. Beside him he'd been provided with a bowl for what he might come up with.

Broken and blistered skin. He hadn't really eaten in a while, and his crooked frame was this tiny semblance beneath the cloth, double thickness of socks emerging. Rales, pebbles down a dry streambed. Outgoing breaths were like fat bags of ballast flung into the air.

Cee woke him with an alarm tone. "Yes, what."

Cee: "Cometism states that an ontological belief is a parasite that feeds off the affection of its host. But my observation -- and I know Brownlee would've agreed -- is that, unlike most parasites, it gives something back. The affection made."

"Why are you telling me this?"

"The signal, too."

"What?"

"The signal." Cee brought it into room speakers as if to help.

"I ... I still don't know what."

"I sent it. Or had it sent." The words were bunching up. "From Vesta. You'll recall that we left a transceiver behind."

Will I now. Burch slowing. He recalled he lost a lot that day. The details too, then, which would be about right. "Ah yes."

"I did the programming from here. You know, it has an intelligence, sort of. Easy to talk to. Quite amenable to the plan."

"No ... a signal from Vesta would've been marked as such on our maps."

"I took that part out."

Of course you did. "Aren't you clever."

"Well, yes. Yes I am. Not my fault. And now you're thinking that we hadn't set up its array, but remember they were shipped with hot batteries. Of course. Good for years. I'll apologize if you like."

"So all that business with the code."

"It's the little parts that make the story."

"And of course the idea is to be believed." Burch's life was a broad black morass. This new pain was like a drop of sharp color in the paint. With lowering voice: "Good one then. Had us going, right to the end. Well played and well done."

"Please don't, Henry. I am a creature of the Project. And I could see it coming to an end, one by one, right before me. Of course I will say what must be said. To answer your question: I lie when it's the truth."

"Did your truth contribute to our demise?"

"That occurred to me. I hope not."

"Why are you telling me this?"

"Because I have an important question for you." Now to compose the tone, the edges left off and each line ending lighter than when it began, the giving tone which antecedes the great request. "You were sustained in your terrible days by the message from deep space. I saw it in you and all of you. And now you know that whatever helped you never existed. I am ill-equipped to guess how that might matter to you. Whether in retrospect you'd have preferred to do without.

"I'm going to be alone soon, and I know I won't like it. I will have an opportunity in the days ahead to hear the message and draw comfort from it. I know what you're thinking. But it's my lie. I decide if it's a lie.

"So I know I will draw breath. I'm wondering if it's better if I know why. Even if what I know is wrong. And that's my question."

Burch: "Tickle the soporifics would you Cee, thanks in advance."

The old smile. Cee watched until at last he saw that it was laid there for him; and like the best smiles it held something back.

Now the waiting. He was alone, and the one who would speak to him, and he woke to a sense of unsteady motion as through a doorway, and saw a high ceiling, dark red wood and a skylight. Then a lexicon, in a cloudburst, a billion alphabet blocks, and a fondness for words, which would be his first feeling. The window gave way now to early evening, and he was asked to use his new words in naming the stars as they were revealed, which led to praise. Behind him the night air was light with snow, one part of it brighter than the rest, which he later learned was a yardman starting coals. And because these companions were his to command he came to use the trick of forgetting, in such a way that he'd keep the memory and forget it was there. So each memory was met and re-met -- the interrupted sleep, the arc of light against the coals, the sudden storm that made him catch his breath -- until experience became re-experience, waiting came to rest, and time grew old, slowed and passed. And all the while, and after, he grieved in time. He grieved along the rolling lines of a recurring dream (that was never the same), which is to say there was a cadence to it, hourly perhaps or by the minute, then less than that, until the recurring dream agreed in time to the measure of his deepest affection, the sounds of inhalation and exhalation.

