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'The best SF author in Britain' *SFX*

FLOX

FLUX

Stephen Baxter

To my nephew James Baxter

Dura woke with a start.

There was something wrong. The photons didn't smell right.

Her hand floated before her face, dimly visible, and she flexed her fingers. Disturbed electron gas, spiraling dizzily around the Magfield lines, sparkled purple-white around the fingertips. The Air in her eyes was warm, stale, and she could make out only vague shapes.

For a moment she hung there, curled in a tight ball, suspended in the elastic grip of the Magfield.

She heard voices, thin and hot with panic. They were coming from the direction of the Net.

Dura jammed her eyes tight shut and hugged her knees, willing herself to return to the comfort of oblivion of sleep. *Not again. By the blood of the Xeelee, she swore silently, not another Glitch, not another spin storm.* She wasn't sure if the little tribe of Human Beings had the resources to respond to more disruption... nor, indeed, if she herself had the strength to cope with fresh disaster.

The Magfield itself trembled now. Encasing her body, it rippled over her skin, not unpleasantly, and she allowed it to rock her as if she were a child in its arms. Then—not so pleasantly—it prodded her more rudely in the small of the back...

No, that wasn't the Magfield. She uncurled again, stretching against the confines of the field. She rubbed her eyes—the fleshy rims of the cups were crusted with sleep-deposits and felt sharp against her fingers—and shook her head to clear the clouded Air out of the cups.

The prod in her back was coming from the fist of Farr, her brother. He'd been on latrine duty, she saw; he still carried his plaited waste bag, empty of the neutron-rich shit he'd taken out away from the Net and dumped in the Air. His skinny, growing body trembled in response to the instabilities in the Magfield and his round face was upturned to her, creased with an almost comical concern. In one hand he gripped a fin of his pet Air-pig—a fat infant about the size of Dura's fist, so young that none of its six fins were yet pierced. The little animal, obviously terrified by the Glitch, struggled to escape, feebly; it pumped out superfluid jetfuel in thin blue streams.

His fondness for the animal made Farr seem even younger than his twelve years—a third of Dura's age—and he clung to the piglet as if clinging to childhood itself. Well, Dura thought the Mantle was huge and empty, but there was precious little room in it for childhood. Farr was having to grow up fast.

He was so like their father, Logue.

Dura, still misty with sleep, felt a surge of affection and concern for the boy and reached out to stroke his cheek, to run gentle fingers around the quiet brown rims of his eyes.

She smiled at her brother. "Hello, Farr."

"Sorry for waking you."

"You didn't. The Star was kind enough to wake me, long before you got around to it. Another Glitch?"

"The worst one yet, Adda says."

"Never mind what Adda says," Dura said, stroking his floating hair; the hollow tubes were

as always, tangled and grubby. "We'll get by. We always do, don't we? You get back to your father. And tell him I'm coming."

"All right." Farr smiled at her again, twisted stiffly, and, with his Air-pig's fin still clutched tight, he began to Wave awkwardly across the Magfield's invisible flux paths toward the Net. Dura watched him recede, his slim form diminished by the shimmering, world-filling vortex lines beyond him.

Dura straightened to her full length and stretched, pressing against the Magfield. She kept her mouth wide open as she worked stiffness out of her limbs and back. She felt the feather-ripple of the Air as it poured through her throat to her lungs and heart, rushing through superleak capillaries and filling her muscles; her body seemed to tingle with its freshness.

She gazed around, sniffing the photons.

Dura's world was the Mantle of the Star, an immense cavern of yellow-white Air bounded below by the Quantum Sea and above by the Crust.

The Crust itself was a rich, matted ceiling, purple-streaked with grass and the hairlike lines of tree trunks. By squinting—distorting the parabolic retinas of her eyes—she could make out dark motes scattered among the roots of the trees fixed to the underside of the Crust. Perhaps they were rays, or a herd of wild Air-pigs, or some other grazing creatures. It was too distant to see clearly, but the amphibian animals seemed to be swirling around each other, colliding, confused; she almost imagined she could hear the cool sound of their distress.

Far below her, the Quantum Sea formed a purple-dark floor to the world. The Sea was mist-shrouded, its surface indistinct and deadly. The Sea itself, she saw with relief, was undisturbed by the Glitch. Only once in Dura's memory had there been a Glitch severe enough to cause a Seaquake. She shuddered like the Magfield as she remembered that ghastly time; she had been no older than Farr, she supposed, when the neutrino founts had come, sweeping half the Human Beings—including Phir, Dura's mother and Logue's first wife—away and on, screaming, into the mysteries beyond the Crust.

All around her, filling the Air between Crust and Sea, the vortex lines were an electric-blue cage. The lines filled space in a hexagonal array, spaced about ten mansheights apart; they swept around the Star from far upflux—from the North—arced past her like the trajectories of immense, graceful animals, and converged into the red-soft blur that was the South Pole millions of mansheights away.

She held her fingers up before her face, trying to judge the spacing and pattern of the lines.

Through her fingers she could see the encampment, a little knot of frantic detail and activity—jostling, terrified Air-pigs, scrambling people, the quivering Net—all embedded in the shuddering bulk of the Air. Farr with his struggling Air-piglet was a pathetic scrap, wriggling through the invisible flux tubes.

Dura tried to ignore the small, messy knot of humanity, to focus on the lines.

Normally the motion of the lines was stately, predictable—regular enough for the Human Beings to measure their lives by it, in fact. Overlaid on the eternal drift of the lines toward the Crust there were pulses of line-bunching: the tight, sharp crowdings that marked the days and the slower, more complex second-order oscillations which humans used to count the months. In normal times it was easy for the Human Beings to avoid the slow creep of the lines; there was always plenty of time to dismantle the Net, repitch their little encampment in another corner of the empty sky.

Dura even knew what caused the lines' stately pulsations, much good the knowledge of her: the Star had a companion, far beyond the Crust—a *planet*, a ball like the Star but smaller, lighter—which revolved, unseen, over their heads, pulling at the vortex lines as if with invisible fingers. And, of course, beyond the planet—the childish ideas returned to her unbidden, like fragments of her lingering sleep—beyond the planet were the stars of the Universe, humans, impossibly distant and forever invisible.

The drifting vortex lines were as stable and secure, in normal times, as the fingers of some friendly god; humans, Air-pigs and others moved freely between the lines, fearlessly and without any danger...

Except during a Glitch.

Now, across the frame of her spread fingers, the vortex array was shifting visibly as the superfluid Air sought to realign with the Star's adjusted rotation. Instabilities—great parallel sets of ripples—already marched majestically along the length of the lines, bearing the news of the Star's new awakening from Pole to magnetic Pole.

The photons emitted by the lines smelled thin, sharp. The spin storm was coming.

Dura had chosen a sleep place about fifty mansheights from the center of the Human Beings' current encampment, in a place where the Magfield had felt particularly thick and comfortingly secure. Now she began to Wave toward the Net. Wriggling, rippling her limbs, she felt electricity course through her epidermis; and she pushed with arms and legs at the invisible, elastic resistance of the Magfield as if it were a ladder. Fully awake now, she found herself filled with a belated anxiety—an anxiety healthily laced with guilt at her tardiness—and as she slid across the Magfield she spread the webbed fingers of her hands and beat at the Air, trying to work up still more speed. Neutron superfluid made up most of the bulk of the Air, so there was barely any resistance to her hands; but still she clawed at the Air, her impatience mounting, seeking comfort in activity.

The vortex lines slid like dreams across her field of vision now. Ripples hurtled in great even chains, as if the vortex lines were ropes shaken by giants located in the mists of the Poles. As the waves beat past her they emitted a low, cool groan. The amplitude of the waves was already half a mansheight. *By Bolder's guts*, she thought, *maybe that old fool Adda is right for once; maybe this really is going to be the worst yet.*

Slowly, painfully slowly, the encampment grew from a distant abstraction, a mélange of movement and noise, to a community. The encampment was based around the crucial cylindrical Net made of plaited tree-bark, slung out along the Magfield lines. Most people slept and ate bound up to the Net, and the length of the cylinder was a patchwork of tied-up belongings, privacy blankets, cleaning brushes, simple clothes—ponchos, tunics and belts—and a few pathetic bundles of food. Scraps of half-finished wooden artifacts and flags of untreated Air-pig leather dangled from the Net ropes.

The Net was five mansheights across and a dozen long. It was at least five generations old, according to the older folk like Adda. And it was the only home of about fifty humans—and their only treasure.

As she neared it, clawing her way through the clinging Magfield, Dura suddenly saw the flimsy construct with an objective eye—as if she had not been born in a blanket tied to its filthy knots, as if she would not die still clinging to its fibers. How fragile it was: how pathetic, how defenseless they truly were. Even as she approached to join her people in this moment

need, Dura felt depressed, weak, helpless.

The adults and older children were Waving all around the Net, working at knots which dwarfed their fingers. She saw Esk, picking patiently at a section of the Net. Dura thought he watched her approach, but it was hard to be sure. In any event Philas, his wife, was with him and Dura kept her face averted. Here and there Dura could make out small children and infants still attached to the Net by tethers of varying lengths. Each child, left tethered up by laboring parents and siblings, was a small, wailing bundle of fear and loneliness, Waving futilely against its constraints, and Dura felt her heart go out to every one of them. Dura spotted the girl Dia, heavily pregnant with her first child. Working with her husband Mur, Dia was pulling tools and bits of clothing from the Net and stuffing them into a sack; Air-sweat glistened from her swollen, naked belly. Dia was a small-limbed, childlike woman whose pregnancy had served to make her only more vulnerable and young-looking; watching her work now, her every movement redolent of fear, made something move inside childless Dura: an urge to protect.

The animals—the tribe's small herd of a dozen adult Air-pigs and about as many piglets—were restrained inside the Net, along its axis. They bleated, their din adding a mournful counterpoint to the shouts and cries of humans; they huddled together at the heart of the Net in a trembling mass of fins, jet orifices and stalks erect with huge, bowl-shaped eyes. A few people had gone inside the Net and were trying to calm the animals, to attach leaders to the pierced fins. But the dismantling of the Net was proceeding slowly and unevenly, Dura saw as she approached, and the herd was a mass of panicky noise, uncoordinated movement.

She heard voices raised in fear and impatience. What had seemed from a little further away to be a reasonably controlled operation was actually little more than a shambles, she realized.

There was something in her peripheral vision—a motion, blue-white and distant... More ripples in the vortex tubes, coming from the distant North: immense, jagged irregularities utterly dwarfing the small instabilities she'd observed so far.

There wasn't much time.

Logue, her father, hung in the Magfield a little way from the Net. Adda, too old and slow for the urgent work of dismantling the encampment, hovered beside Logue, his thin face twisted with sour. Logue bellowed out orders in his huge baritone, but, Dura could already see, with very little effect on the Human Beings' coordination. Still Dura had that odd feeling of timelessness and detachment, and she studied her father as if meeting him for the first time in many weeks. Logue's hair, plastered against his scalp, was crumpled and yellowed; his face was a mask through which the round, boyish features shared by Farr could still be discerned, obscured by a mat of scars and wrinkles.

As Dura approached, Logue turned to her, his brown eyecups wide, his cheek muscles working. "You took your time," he growled at her. "Where have you been? You're needed here. Can't you see that?"

His words cut through her detachment, and despite herself, despite the urgency of the moment, she felt resentment building in her. "Where? I've been to the Core in a Xeele nightfighter. Where do you think I've been?"

Logue turned from her in apparent disgust. "You shouldn't blaspheme," he muttered.

She wanted to laugh. Impatient with him, with herself, with the continual friction between them, she shook her head. "Oh, into the Ring with it. What do you want me to do?"

Now old Adda leaned forward, the open pores among his remaining hair sparkling with sweat. "Don't know there's much you *can* do," he said sourly. "Look at them. What shambles."

"We're not going to make it in time, are we?" Dura asked him. She pointed North. "Look at that ripple. We won't get out of the way before it hits."

"Maybe. Maybe not." The old man raised his empty eyes to the South Pole; its soft glow illuminated the backs of his eyes, the cup-retinas there; fragments of debris swirled around the rims and tiny cleansing symbiotes swam constantly in and out of the cups.

Logue bellowed suddenly, "Mur, you damn fool. If that knot is stuck then cut it. Rip it. Gnaw it through if you have to!—but don't just leave it there, or half the Net is going to go flapping off into the Quantum Sea when the storm hits us..."

"Worst I've ever seen," Adda muttered, sniffing. "Never known the photons to smell so sour. Like a frightened piglet... Of course," he went on after a few moments, "I remember one spin storm when I was a kid..."

Dura couldn't help but smile. Adda was the wisest among them, probably, about the way of the Star. But he relished his role as doomsayer... he could never let go of the mysteries of his own past, of the wild, deadly days which only he could remember...

Logue turned on her with fury, his face as unstable as the quivering Magfield. "While you grin, we could die," he hissed.

"I know." She reached out and touched his arm, feeling the hot tide of Air which superleaked from his clenched muscles. "I know. I'm—sorry."

He frowned, staring at her, and reached forward, as if to touch her. But he drew the hand back. "Perhaps you're not as strong as I like to think you are."

"No," she said quietly. "Perhaps I'm not."

"Come," he said. "We'll help each other. And we'll help our people. No one's dead yet, after all."

Dura scrambled across the Magfield flux lines to the Net. Men, women and older children were gathered in tight huddles, their thin bodies bumping together as they floated in the turbulent Magfield, laboring at the Net. They cast fearful, distracted glances at the approaching vortex instabilities, and from all around the Net Dura could hear muttered—shouted—prayer-chants, pleas for the benevolence of the Xeelee.

Watching the Human Beings, Dura realized they were huddling together for *comfort*, not for efficiency. Rather than working evenly and systematically around the Net, the people were actually impeding each other from working effectively at the dismantling; whole sections of the tangled Net were being left unattended.

Dura's feeling of depressed helplessness deepened. Perhaps she could help them organize better—act as Logue's daughter for once, she admonished herself wearily, act as a *leader*. But as she studied the frightened faces of the Human Beings, the round, staring eyecups of the children, she recognized the weary terror which seemed to be numbing her own reaction.

Maybe huddling and praying was as rational a response as any to this latest disaster.

She twisted in the Air and Waved toward an empty section of Net, keeping well away from Esk and Philas. Logue would have to do the leading; Dura would remain one of the led.

The first of the massive ripples neared the encampment. Feeling the growing tension in the Air, Dura grasped the Net's sturdy rope and pulled her body against its shuddering bulk. For

moment her face was pressed against the Net's thick mesh, and she found herself staring at an Air-pig, not an arm's length from her. The rope-threaded holes punched through its fins were widened with age, ringed by scar tissue. The Air-pig seemed to be looking into her eyes; its six eyestalks pushed straight out from its brain pan, the cups swiveled at her. The beast was one of the oldest of the Air-pigs—as a kid, she recalled wistfully, she would have known the names of each one of the meager herd—and it must have seen plenty of spin storms before. *Well, she thought. What's your diagnosis? Do you think we've a chance of getting through this storm any better than we have all the others? Will you live to see the other side of it? What do you think?*

The creature's fixed, mournful stare, the brown depths of its eyecups, afforded her no reply. But its musty animal warmth stank of fear.

The mat of rope before her face glimmered suddenly, blue-white; her head cast a shadow before her.

She turned to see that one vortex line had drifted to within a couple of mansheights of her position; it shimmered in the Air, quivering, a cable emitting an electric-blue glow almost too clamorous for her eyes.

The tribesfolk appeared to have given up any attempts at dismantling the Net; even Logu and Adda had come Waving across to the illusory safety of the habitat. People simply clung on where they were, arms wrapped around each other and around the smallest of the children, the opened-up Net flapping uselessly around them. The crying of children resounded.

And now, with sudden brutality, the spin storm hit. A jagged discontinuity a mansheight deep surged along the nearest vortex line past the Net, faster than any human could Wave, faster even than any wild Air-pig could jet through the Air. Dura tried to concentrate on the solidity of the fibrous rope in her hands, the comforting Magfield which, as always, confined her body with a gentle grip... But it was impossible to ignore the sudden thickness of the Air in her lungs, the roaring heat-noise blasting through the Air so powerfully she feared for her ears, the quivering of the Magfield.

She clenched her eyes closed so hard that she could feel the Air in the cups squeezed away. *Concentrate, she told herself. You understand what's happening here. That wretched Air-pig, bound up inside the Net, is as ignorant as the youngest piglet in its first storm. But not you; not a Human Being.*

And it is through understanding that we will prevail... But, even as she intoned the words to herself like a prayer, she could not find any truth in that pious hope.

The Air was a neutron liquid, a superfluid. Superfluids could not sustain spin over extended distances. So, in response to the rotation of the Star, the Air became filled with vortex line tubes of vanishing thinness within which the Air's rotation was confined. The vortex lines aligned themselves in regular arrays, aligned with the Star's rotation axis—closely parallel to the magnetic axis followed by the Magfield. The vortex lines filled the world. They were safe as long as you stayed away from them; every child knew that. But in a Glitch, Dura thought ruefully, the lines sometimes came looking for you... and the Air's superfluidity broke down around a collapsing vortex line, transforming the Air from a thin, stable, lifegiving fluid into a thing of turmoil and turbulence.

The worst of the first spin gust seemed to be passing now. Still clinging to the Net, she opened her eyes and cast rapidly around the sky.

The vortex lines, parallel beams receding into infinity, were still marching grandly across the sky, seeking their new alignment. It was quite a magnificent sight, and for a moment Dura felt wonder thrill through her as she imagined the arrays of spin lines which stretched rigidly around the Star realigning, gathering and spreading, as if the Star were bound up in the integrated thoughts of some immense mind.

The Net shuddered in her grip, its coarse fibers abrading her palms; the sharp pain jolted her rudely back to the here and now. She sighed, gathering her strength, as weariness closed around her again.

"Dura! Dura!"

The childish voice, thin and scared, came drifting to her from a few mansheights away. Gripping the Net with one hand, she twisted to see Farr, her little brother, suspended in the Air like a discarded fragment of cloth and flesh. He was Waving toward her.

When Farr reached her, Dura enfolded him in her free arm, helping him wrap his arms and legs around the security of the Net's ropes. He was breathing hard and trembling, and she could see the short hairs which coated his scalp pulsing as superfluid surged through them.

"I was thrown off," he gasped between gulps of Air. "I lost my piglet."

"So I see. Are you okay?"

"I think so." He stared up at her, his eyes wide and empty, and he raked his gaze across the sky as if searching for the source of this betrayal of his safety. "This is terrible, isn't it, Dura? Are we going to die?"

She ran her fingers casually through his stiff hair. "No," she said, with a conviction she could never have mustered for herself alone. "No, we won't die. But we are in danger. No, come on, we should get to work. We need to get the Net taken apart, folded up, before the next instability hits us and wrecks it." She pointed to a small, open-looking knot. "There. Undo that. As quick as you can."

He buried his trembling fingers in the knot and began prizing out lengths of rope. "How long before the next ripple?"

"Long enough to finish the job," she said firmly. For confirmation, with her own fingers still dragging at the stubborn knots, she glanced upflux—Northward—to the source of the next ripple.

Instantly she saw how wrong she had been. From around the Net she heard voices raised in wonder and rising alarm; within a few heartbeats, it seemed, she was hearing the first screams.

The next ripple was closing on them; already she could hear its rising clamor of heaving fluctuations. This new instability was huge, at least five or six mansheights deep. Dura watched, mesmerized, her hands frozen. Already the ripple was hurtling at her faster than anything she could remember, and as it approached its amplitude seemed to be deepening, as if they were feeding on Glitch energy. And, of course, with greater amplitude came still greater speed. The instability was a complex superposition of wave shapes clustered along the length of the migrating vortex line, a superposition which spiraled around the line like some malevolent animal clambering toward her...

Farr said, "We can't escape that. Can we, Dura?"

There was a moment of stillness, almost of calm. Farr's voice, though still cracked by adolescence, had sounded suddenly full of a premature wisdom. It was some comfort that Dura wasn't going to have to lie to him.

"No," she said. "We've been too slow. I think it's going to hit the Net." She felt distant from the danger around her, as if she were recalling events from long ago, far away.

Even as it rushed up toward them the ripple bowed away from the trend of the vortex line in ever more elaborate, fantastic shapes. It was as if some elastic limit had been passed and the vortex line, under intolerable strain, was yielding.

It was almost beautiful, captivating to watch. And it was only mansheights away.

She heard the thin voice of old Adda, from somewhere on the other side of the Net. "Get away from the Net. Oh, get away from the Net!"

"Do as he says. Come on."

The boy slowly lifted his head; he still clung to the rope, and his eyes were empty, as beyond fear or wonder. She drove a fist into one of his hands. "Come on!"

The boy cried out and withdrew his hands and legs from the Net, staring at her with round face full of betrayal... but a face that looked once more like that of an alert child rather than a bemused, petrified adult. Dura grabbed his hand. "Farr, you have to Wave as you've never Waved before. Hold my hand; we'll stay together..."

With a thrust of her legs she pushed away. For the first moments she seemed to be dragging Farr behind her; but soon his body was Waving in synchronization with her, wriggling against the cloying thickness of the Magfield, and the two of them hurried away from the doomed Net.

As she Waved, gasping, Dura looked back. The spin instability, recoiling, wafted through the Air like a deadly, blue-white wand. It scythed toward the Net with its cargo of wriggling humans. It was like some wonderful toy, Dura thought; it glowed intensely brightly, and the heat-noise it emitted was a roar, almost drowning out thought itself. The bleating of trapped Air-pigs was cold-thin, and Dura thought briefly of the old animal with whom she had shared that brief, odd moment of half-communication; she wondered how much that poor creature understood of what was to happen.

Maybe half the Human Beings had heeded Adda's advice to get away. The rest, apparently paralyzed by fear and awe, still clung to the Net. The pregnant Dia was lumbering away in the Air with Mur; the woman Philas still picked frantically, uselessly, at the Net, despite the pleas of her husband Esk to come away. It was as if, Dura thought, Philas imagined that the work was a magic spell which would drive the instability away.

Dura knew that rotation instabilities lost energy rapidly. Soon, very soon, this fantastic demon would wither to nothing, leaving the Air calm and empty once more. And, glowing, roaring, stinking of sour photons, the instability was indeed visibly shrinking as it bore down on the Net.

But, it was immediately obvious, not shrinking fast enough...

With a heat-wail like a thousand voices the instability tore into the Net.

It was like a fist driving into cloth.

The Air inside the Net ceased to be superfluid and became a stiff, turbulent mass, whipping and whorling around the vortex instability like some demented animal. Dura saw knots burst open; the Net, almost gracefully, disintegrated into fragments of rope, into rough mats to which adults and children clung.

The Air-pig herd was hurled away into the Air as if scattered by a giant hand. Dura could see how some of the beasts, evidently dead or dying, hung where they were thrown, limp

suspended against the Magfield; the rest squirted away through the Air, their bellow-gurgling puffing out farts of blue gas.

One man, clinging alone to a raft of rope, was sucked toward the instability itself.

It was too far away to be sure, but Dura thought she recognized Esk. Dozens of mansheights from the site of the Net, she was much too far away even to call to him—let alone to help—but nevertheless she seemed to see what followed as clearly as if she rode her lost lover's shoulder toward the deadly arch.

Esk, with his mat of rope, tumbled through the plane of the quivering, arch-shaped instability and was hurled around the arch itself, as limp as a doll. His trajectory rapidly lost energy and, unresisting, he spiraled inward, orbiting the arch like some demented Air-piglet.

Esk's body burst open, the chest and abdominal cavities peeling back like opening eyes, the limbs coming free almost easily, like a toy's.

Farr cried out, wordless. It was the first sound he'd made since they'd pushed away from the Net.

Dura reached for him and clutched his hand, hard. "Listen to me," she shouted over the arch's continuing heat-clamor. "It looked worse than it was. Esk was dead long before he hit the arch." And that was true; as soon as he had entered the region in which superfluidity broke down, the processes of Esk's body—his breathing, his circulatory system, his veins and muscles, all reliant on the exploitation of the Air's superfluidity—would have collapsed. To Esk, as the strength left his limbs, as the Air coagulated in the superleak capillaries of his brain, death must have been like falling gently asleep.

She thought. She hoped.

The instability passed through the site of the Net and sailed on into the sky, continuing its futile mission toward the South. But even as Dura watched, the arch shape was dwindling, shrinking, its energy expended.

It left behind an encampment which had been torn apart as effectively as poor Esk's body.

Dura pulled Farr closer to her, easily overcoming the gentle resistance of the Magfield, and stroked his hair. "Come on," she said. "It's over now. Let's go back, and see what we can do."

"No," he said, clinging to his sister. "It's never over. Is it, Dura?"

Little knots of people moved through the glistening, newly stable vortex lines, calling to each other. Dura Waved between the struggling groups, searching for Logue, or news of Logue; she kept a tight grip on Farr's hand.

"Dura, help us! Oh, by the blood of the Xeelee, help us!"

The voice came to her from a dozen mansheights away; it was a man's—thin, high and desperate. She turned in the Air, searching for its source.

Farr took her arm and pointed. "There. It's Mur, over by that chunk of Net. See? And he looks as if he's got Dia with him."

Heavily pregnant Dia... Dura pulled at her brother's hand and Waved rapidly through the Air.

Mur and Dia hung alone in the Air, naked and without tools. Mur was holding his wife on his shoulders and cradling her head. Dia was stretched out, her legs parting softly, her hands locked around the base of her distended belly.

Mur's young face was hard, cold and determined; his eyes were pits of darkness as he peered at Dura and Farr. "It's her time. She's early, but the Glitch... You'll have to help me."

"All right." Dura lifted Dia's hands away from her belly, gently but firmly, and ran her fingers quickly over the uneven bulge. She could feel the baby's limbs pushing feebly at the wall which still restrained it. The head was low, deep in the pelvis. "I think the head's engaged," she said. Dia's young, thin face was fixed on hers, contorted with pain; Dura tried to smile at her. "It feels fine. A little while longer..."

Dia hissed, her face creased with pain, "Get on with it, damn you."

"Yes."

Dura looked around desperately; the Air around them was still empty, the nearest Human Beings dozens of mansheights away. They were on their own.

She closed her eyes for a moment, trying to resist the temptation to search the Air for Logue. She delved deep inside herself, looking for strength.

"It's going to be all right," she said. "Mur, hold her neck and shoulders. You'll have to brace her there; if you Wave a little you'll hold yourself in place, and..."

"I know what to do," Mur snapped. Still holding Dia's small head against his chest, he grasped her shoulders and Waved slowly, his strong legs beating at the Air.

Dura felt awkward, inadequate. *Damn it*, she thought, aware of the pettiness of her own reaction, *damn it, I've never done this on my own before. What do they expect?*

What next? "Farr, you'll have to help me."

The boy hovered in the Air a mansheight away, his mouth gaping. "Dura, I..."

"Come on, Farr, there's nobody else," Dura said. As he came close to her she whispered, "I know you're frightened. I'm frightened too. But not as much as Dia. It's not so difficult as that, anyway. We'll do fine..."

As long as nothing goes wrong, she thought.

"All right," Farr said. "What do I do?"

Dura took hold of Dia's right leg, wrapping her fingers tightly around the lower calf. The woman's muscles were trembling and slick with Air-sweat, and Dura could feel the leg pushing apart; Dia's vagina was opening like a small mouth, popping softly. "Take her other leg," she told Farr. "Like I've done. Get a tight hold; you're going to have to pull hard."

Farr, hesitant and obviously scared, did as he was told.

The baby moved, visibly, further into the pelvic area. It was like watching a morsel of food disappear down some huge neck. Dia arched back her head and moaned; the muscles in her neck were stiff and prominent.

"It's time," Dura said. She glanced around quickly. She and Farr were in position, holding Dia's ankles; Mur was already Waving, quite hard, pushing at his wife's shoulders, so that the little ensemble drifted slowly through the Air. Both Mur's and Farr's eyes were locked on Dura's face.

Dia called out again, wordlessly.

Dura leaned back, grasping Dia's calf, and pushed firmly with her legs at the Magfield. "Farr! Do what I'm doing. We have to open her legs. Go on; don't be afraid."

Farr watched her for a moment, then leaned back and Waved in a copy of his sister's movements. Mur cried out and shoved hard at his wife's shoulders, balancing Farr and Dura.

Dia's legs parted easily. She screamed.

Farr's hands slid over Dia's convulsing calf; in his shock he seemed to stumble in the Air. His eyes wide. Dia's thighs twitched back toward each other, the muscles shuddering.

"No!" Mur shouted. "Farr, keep going; you mustn't stop now!"

Farr's distress was evident. "But we're hurting her."

"No."

Damn it, Dura thought, Farr should know what's happening here. Dia's pelvis was hinged with the birth so close the cartilage locking the two segments of the pelvis together would have dissolved into Dia's blood, leaving her pelvis easily opened. Her birth canal and vagina were already stretching, gaping wide. Everything was working together to allow the baby head an easy passage from the womb to the Air. *It's easy, Dura thought. And it's easy because the Ur-humans designed it to be easy, maybe even easier than for themselves...*

"It's meant to be like this," she shouted at Farr. "Believe me. You'll hurt her if you stop now if you don't help us. And you'll hurt the baby."

Dia opened her eyes. The cups brimmed with tears. "Please, Farr," she said, reaching toward him vaguely. "It's all right. Please."

He nodded, mumbling apologies, and pulled once more at Dia's leg.

"Easy," Dura called, trying to match his motion. "Not too fast, and not jerkily; nice and smooth..."

The birth canal gaped like a green-dark tunnel. Dia's legs parted further than it would have seemed possible; Dura could see, under the thin flesh around the girl's hips, how the pelvis had hinged wide.

Dia screamed; her stomach convulsed.

The baby came suddenly, wriggling down the birth passage like an Air-piglet. It squirted into the Air with a soft, sucking noise; droplets of dense, green-gold Air sprayed around it. As soon as it was out of the canal the baby started to Wave, instinctively but feebly, across the Magfield within which it would be embedded for all of its life.

Dura's eyes locked on Farr. He was following the baby's uncertain progress through the Air, his mouth slack with wonder; but he was still firmly holding Dia's leg. "Farr," Dura commanded. "Come back toward me now. Slowly, steadily—that's it..."

Dia's only danger now was that her hinged bones would not settle neatly back into place without dislocation; and even if all went well, for a few days she would be barely able to move as the halves of her pelvis knitted together once more. With Dura and Farr guiding them, her legs closed smoothly; Dura could see the bones around Dia's pelvis sliding smoothly back into place.

Mur had managed to snatch a rag, a remnant of some piece of clothing, from the littered Air; now he wiped tenderly at Dia's relaxing, half-sleeping face. Dura took some of the rag and mopped at Dia's thighs and belly.

Farr Waved slowly toward them. He had chased after and caught the baby, Dura saw; now he held the child against his chest as proudly as if it were his own, uncaring of the birth fluids which pooled on his chest. The infant's mouth was still distorted into the characteristic horseshoe shape it had needed to lock on to the womb-wall nipples which sustained it before its birth, and its tiny penis had popped out of the protective cache between its legs.

Farr, grinning, held the baby out to its mother. "It's a boy," he said.

"Jai," Dia whispered. "He's Jai."

Forty Human Beings had survived, of fifty. All but six adult Air-pigs, four of them males, were gone. The Net, torn and scattered, was irreparable.

Logue was lost.

The tribe huddled together in the Magfield, surrounded by featureless Air. Mur and Dura clung together, cradling their new, mewling baby. Dura uncomfortably led the Human Being through a brief service of prayers, calling down the beneficence of the Xeelee. Adda stayed close to her, silent and strong despite his age, and Farr's hand was a constant presence near hers.

Then the bodies they'd managed to retrieve were released into the Air; they slid, dwindling down to the Quantum Sea.

Philas, wife of the dead Esk, approached Dura after the service, Waving stiffly. The two women studied each other, not speaking; Adda and the rest moved away, averting their faces.

Philas was a thin, tired-looking woman; her uneven hair was tied back with a piece of rope, making her face look skeletal. She stared at Dura, as if daring her to grieve.

The Human Beings were monogamous... but there were more adult women than men. *So monogamy doesn't make sense, Dura thought wearily, and yet we practice it anyway. Clearly, rather, we pay lip-service to it.*

Esk had loved them both... at any rate, he had shown tenderness to them both. And his relationship with Dura had been no secret to Philas, or to anyone else, for that matter. It had certainly done Philas no harm.

Perhaps Philas and Dura could help each other now, Dura thought. Perhaps hold each other. But they wouldn't even speak about it.

And she, Dura, would not even be allowed to grieve openly.

At last Philas spoke. "What are we going to do, Dura? Should we rebuild the Net? What should we do?"

Staring into the woman's dull eyecups, Dura wanted to retreat into herself, to bring forward her own grief for her father, for Esk, as a shield against Philas's demands. *I don't know. I don't know. How could I know?*

But there was nowhere to retreat.

Ten Human Beings—Dura with Farr in tow, Adda, the newly widowed Philas, and six other adults—climbed out of the site of the devastated encampment. They Waved steadily across the Magfield and toward the Crust, in search of food.

Adda, as was his custom, stayed a small distance away from the rest as they Waved across the field-lines. One of his eyes was matted over with the scars of age—thinking about it now he gave that cup a quick poke with a fingertip to dislodge some of the less welcome little creatures who were continually trying to establish residence in there—but the other eye was as keen as it had ever been, and as he Waved he swept his gaze through the Air above and below and all around them. He liked to stay apart to keep an eye on things... and it allowed him to hide the fact that he sometimes had trouble keeping up with the rest. It was his boast that he could still Wave as good as any damn kid. It wasn't true, of course, but it was his boast. He used to wriggle across the Magfield like an Air-piglet with a neutrino fount up in his arse, he recalled wistfully, but that was a long time ago. Now he must look like a Xeeleee grandmother. Adda's vertebrae seemed to be seizing up one by damn one as time wore away, so that his Waving was more like thrashing; it took a conscious effort to thrust his pelvis back, to let his legs flop behind the motion of his hips, to let his head drive ahead of the bending of his spine. And his skin was coarsened by age, too, tough as old tree-bark in some places; that had its advantages, but it meant that he had trouble feeling the places where the electric currents induced in his epidermis by his motion across the Magfield were strongest. Damn it, he could barely *feel* the Magfield now; he was, he thought sourly, Waving from memory.

Much like sex these days.

As always he carried his battered and trusted spear, a sharpened pole of wood prized from a tree trunk by his own father hundreds of months ago. His fingers nestled comfortably in the gripping grooves carved expertly in the shaft, and electrical currents Magfield-induced in the wood tingled in his palm. As his father had taught him, he kept the spear pointed along the direction of the Magfield across which they climbed... for, of course, the wood—in fact any material—was stronger in the direction of the Magfield than across it. And as any child knew, if danger did approach it would most likely come along the Magfield lines, in which direction motion was invisibly easy.

There weren't many predators who would attack humans, but Adda had seen a few, and his father had told him of worse. The rays, for instance... Even a mature Air-boar—the tougher cousin of the Air-pig—could give a man or woman a hard fight, and could carry away a child as easy as snipping krypton grass away from the Crust, if it was hungry enough.

Even half as hungry as the Human Beings were going to grow before much longer.

He looked along the gleaming cage of vortex lines which swept to red-mist infinity at the South Pole, slicing up the sky around his companions. As always—whenever he traveled even a short distance from the illusory completeness of the tribe's tiny human environ—he was struck by the immensity of the Mantle-world; and as his eye followed the converging parallels of the vortex lines he felt as if his tiny spirit, helpless with awe, was somehow drawn along the

lines. The island of scattered debris which marked the site of their devastated encampment was a dirt-colored mote Air-marooned in the clean, yellow-white immensities of the Star. And his companions—nine of them still, he counted automatically—were Waving across the field lines with unconscious synchronization, ropes and nets wrapped loosely around their waists, their faces upturned to the Crust. One man had peeled away from the rest; he had found an abandoned spin-spider web slung across the vortex lines, and was searching it efficiently for eggs.

Human Beings looked so beautiful when they moved. And when a shoal of the kids were whirling along the Magfield—flapping their legs so hard you could see the glow of the induced fields shining in their limbs, and spiraling around the flux lines fast enough to turn them into blurs—well, it was hard to imagine a better sight in this or any of the fabled, lost worlds of the Ur-humans.

But at the same time humans looked so fragile, dwarfed as they were by the immensities of the vortex-line cage and by the deep and deadly mysteries of the Quantum Sea far below. Somehow an Air-pig looked the part for this environment, he thought. Round and fat and solid... Why, even a neutrino fount didn't have to be the end for an Air-pig; all it had to do was to tuck in its eyes, fold down its fins and ride out the storm. Unless it got blasted out of the Star altogether, what could happen? When the fount was done the pig could just unfold, graze on whatever foliage it could find—for trees were trees, whichever part of the Crust they were growing out of—and mate with the first Air-pig it came across. Or get mated with, Adda thought with a grin.

Humans weren't like that. Humans were *delicate*. Easily smashed up, broken apart. He thought of Esk: a damn fool, but nobody deserved to die like that. And, more than anything else, humans were *strange*. If Adda were to pluck one of these irritating little nibblers out of his dud eye now and look at it up close, he knew he'd find the same basic design as the average Air-pig: six fins, symmetrically placed, an intake-mouth to the front, jet vents to the rear, six tiny eyes. All Mantle animals were the same, just scaled big and small, or with differences of proportion; the basic features could be recognized even in superficially different creatures like rays.

...Except for humans. There was nothing, no other animal, like a human in all this world.

That wasn't a surprise, of course. Every kid learned at his mother's breast how the Ur-humans had come from somewhere far away—a place much better than this, of course; Adda suspected every human on every world grew up believing that—and had left children here to grow, to be strong, and to join the community of mankind one day, all under the beneficial and all-too-abstract gaze of that multiple God, the Xeelee.

So the Human Beings had been *put* there. Adda had no doubt about the basic truth of the old story—damn it, you only had to watch humans in flight to see the blinding self-evidence of it—but on the other hand, he thought as he watched the flock of Human Beings soar across the sky, he wouldn't really *want* to be built like an Air-pig. Fat and round and flying by farts?

Mind you, flatulence was one skill he *had* bettered as he had got older. Maybe it wouldn't have been such a bad idea to have been an Air-pig after all.

Adda was the oldest surviving Human Being. He knew what the others thought of him: that he was a sour old fool, too gloomy for his own good. But he didn't care much about that. He hadn't survived longer than any of his contemporaries by accident. But he was, and always had been, essentially a simple man, not gifted with the power over people and language.

shown by, say, a Logue. Or even a Dura, he thought, even though she mightn't realize it yet. So if he irritated folk with anecdotes of his boyhood... but, even as they laughed at him, if they soaked up any one of the small lessons which had kept him alive... well, that was all right by Adda.

Of course, there were fragments from the past he didn't share with anyone. He'd no doubt for instance, that the Glitches were changing.

There had always been Glitches, spin storms. He even knew what caused them, in an abstract sort of way: the slowing of the Star's rotation, and the consequent explosive equalizations of spin energy. But over the last few years the Glitches had got worse... far worse, and much more frequent.

Something else was causing Glitches now. Something unknowably powerful, disrupting the Star...

Of course, his crotchety exterior had a major advantage—one he'd never admitted to anyone else, and only half-allowed to himself. By acting so sour he never had to show the unbearable love he felt for his fellow humans as he watched their alien, vulnerable, impossible beautiful flight across the Magfield, or the heartbreak he endured at the loss of even the most wasted, most spoiled life.

Hefting his dragging spear in tiring fingers, Adda kicked on toward the treetops of the Crust with renewed vigor.

Farr hovered in the Air, his knees tucked against his chest. With four or five brisk pushes he emptied his bowels. He watched the pale, odorless pellets of shit sail sparkling into the empty Air and sink toward the underMantle. Dense with neutrons, the waste would merge into the unbreathable underMantle and, perhaps, sink at last into the Quantum Sea.

He'd never been so high.

The treetops were only a few minutes' Waving above him now: only a score of mansheights or so. The round, bronzed leaves of the trees, all turned toward the Quantum Sea, formed a glimmering ceiling over the world. As he Waved he stared up at that ceiling longingly, as if the leaves somehow represented safety—and yet he looked nervously too. For beyond the leaves were the tree trunks, suspended in darkness; and beyond the trunks lay the Crust itself, where all manner of creatures prowled... At least according to old Adda, and some of the other kids.

But still, Farr realized, he'd rather be up there amidst the trees than—*suspended*—out here.

He pushed at the Magfield and shimmered upward.

Farr, young as he was, was used to the feeling of fear. Of mortal terror, even. But he was experiencing a kind of fear new to him—a novelty—and he probed at it, trying to understand.

The nine adults around him Waved steadily upward, their faces turned up to the trees like inverted leaves. Their bodies moved efficiently and with varying degrees of grace, and Farr could smell the musky photons they exuded, hear the steady rhythm of their breathing as they worked, wordless. His own breath was rapid; the Air up here felt thin, shallow. And he was growing colder, despite the hard work of Waving.

Somehow, without realizing it, Farr had gotten himself to the center of the Waving group so they formed a protective barrier around him. In fact, he realized, he was Waving close to his sister, Dura, as if he were some little kid who needed his hand holding.

How embarrassing.

Discreetly, without making it too obvious, he leaned forward so that he slid out toward the edge of the group, away from Dura. And at the edge that strange new flavor of fear—a feeling of exposure—assailed him again. Shaking his head as if to clear out musty Air, he forced himself to turn away from the group, twisting in the Air, so that he faced outward, across the Mantle.

Farr knew that the Mantle was tens of millions of mansheights deep. But humans could survive only in a band about two million mansheights thick. Farr knew why... or some of it anyway. The complex compounds of heavy tin nuclei which composed his body (so his father had explained earnestly) could remain stable—remain bonded by exchanges of neutron pairs—only within this layer. It was all to do with neutron density: too far up and there weren't enough neutrons to allow the complex bonding between nuclei; too far down, in the cloying underMantle, there were *too many* neutrons—in the underMantle the very nuclei which composed his body would begin to dissolve, liquefying at last into smooth neutron liquid.

And here—close to the treetops, nearing the top of the habitable band—he was tens of thousands of mansheights above the site of the ruined Net.

Farr looked down, beyond his Waving feet, back the way he had climbed. The vortex lines crossed the enormous sky, hundreds of them in a rigid parallel array of blue-white streaks which melted into misty vanishing-points to left and right. The lines blurred below him, the distance between them foreshortening until the lines melted into a textured blue haze above the Quantum Sea. The Sea itself was a purple bruise below the vortex lines, its surface mist-shrouded and deadly.

...And the surface of the Sea curved downward.

Farr had to suppress a yell by gulping, hard. He looked again at the Sea and saw how it fell subtly away in every direction; there seemed no doubt that he was looking down at a huge sphere. Even the vortex lines dipped slightly as they arced away, converging, toward the horizons of the Sea. It was as if they were a cage which encased the Sea.

Farr had grown up knowing that the world—the Star—was a multilayered ball, a *neutron star*. The Crust was the outer surface of the ball, with the Quantum Sea forming an impenetrable center; the Mantle, including the levels inhabited by humans, was a layer inside the ball filled with Air. But it was one thing to know such a fact; it was quite another to see it with your own eyes.

He was *high*. And he *felt* it. He stared down now, deep down, past his feet, at the emptiness which separated him from the Sea. Of course, the Net was long since lost in the Air, a distant speck. But even that, had he been able to see it, would have been a comforting break in this looming immensity...

A break from what?

Suddenly he felt as if his stomach were turning into a mass of Air, and the Magfield he was climbing seemed—not just invisible—but intangible, almost irrelevant. It was as if there was nothing keeping him up...

He shut his eyes, tight, and tried to retreat into another world, into the fantasies of his childhood. Perhaps once more he could be a warrior in the Core Wars, the epic battles with the Colonists at the dawn of time. Once humans had been strong, powerful, with magical four-walled "wormhole Interfaces" which let them cross thousands of mansheights in a bound, and great machines which allowed them to fly through the Star and beyond.

But the Colonists, the mysterious denizens of the heart of the Star, had emerged from the glutinous realm to wage war on humanity. They had destroyed, or carried off, the marvelous Interfaces and all the rest—and would have scraped mankind out of the Mantle altogether, not for the wily cunning of Farr: Farr the Ur-human, the giant god-warrior...

At length he felt a touch on his shoulder; he opened his eyes to see—not a Colonist—but Dura hovering before him, a look of careful neutrality on her face. She pointed upward. "We're there."

Farr looked up.

Leaves—six of them arranged in a neat, symmetrical pattern—hung down just above his head. With a surge of absurd gratitude Farr pulled himself up into the darkness beyond the leaves.

A branch about the thickness of his waist and coated with slick-dark wood led from the leaves into a misty, blue-glowing darkness above him... no, he thought, that was the wrong way around; somewhere up there was the trunk of the tree, suspended from the Crust, and from that grew this branch, and from that in turn grew the leaves which faced the Sea. He ran a hand along the wood of the branch; it was hard and smooth, but surprisingly warm to the touch. A few twigs dangled from the main stem, and tiny leaves sought chinks of light between the larger cousins.

He found himself clinging to the branch, his arms wrapped around it as if around the arm of his mother. The warmth of the wood seeped through his chilled body. Embarrassment flickered through his mind briefly, but he ignored it; at last he felt safe.

Dura slid through the leaves and came to rest close to him. The subdued shadow-light of the tree picked out the curves of her face. She smiled at him, looking self-conscious. "Don't worry about it," she said, quietly enough that the others couldn't hear. "I know how you feel. It was the same, the first time I came up here."

Farr frowned. Reluctantly he released the branch and pushed himself away. "You were right. But I feel as if—as if I'm about to be pulled out of this tree..."

"It's called being frightened of falling."

"But that's ridiculous. Isn't it?" To Farr, "falling" meant losing your grip on the Magfield when Waving. It was always over in a few mansheights at the most—the tiny resistance of the Air and the currents induced in your skin soon slowed you down. Nothing to fear. And then you could just Wave your way around the Magfield to where you wanted to get to.

Dura grinned. "It's a feeling as if..." She hesitated. "...as if you could let go of this tree, right now, and not be able to stop yourself sliding down, across the Magfield and across the vortex lines, faster and faster, all the way to the Sea. And your belly clenches up at the prospect."

"That's exactly it," he said, wondering at how precise her description was. "What does it mean? Why should we feel like that?"

She shrugged, plucking at a leaf. The heavy plate of flesh came free of its attaching branch with a sucking sound. "I don't know. Logue used to say it's something deep inside us. An instinct we carried with us, when humans were brought to this Star."

Farr thought about that. "Something to do with the Xeelee."

"Perhaps. Or something even older. In any event, it's not something you need to worry about. Here." She held out the leaf toward him.

He took it from her cautiously. It was a bronze-gold plate, streaked radially with purple and blue, about as wide as a man's hand. It was thick and pulpy—springy between his fingers—

and, like the wood, was warm to the touch, although, away from its parent branch, it seemed to be cooling rapidly. He turned it over, prodding it with a fingertip; its underside was dry, almost black. He looked up at Dura. "Thanks," he said. "What shall I do with it?"

She laughed. "Try eating it."

After a cautious inspection of her face to make sure this wasn't some kind of joke—Dura didn't usually play tricks on him; she was a little too serious for that... but you never knew—Farr lifted the leaf to his lips and bit into it. The flesh of the leaf was thin, surprising in its insubstantiality, and it seemed to melt against his tongue; but the taste it delivered was astonishingly sweet, like the meat of the youngest Air-piglet, and Farr found himself cramming it into his mouth.

Within seconds he was swallowing the last of the leaf, savoring the lingering flavor on his tongue. It had been delicious but really quite light, and had done little but whet his hunger further. He looked around avidly. Here on the upper side of the treetop ceiling he could see the leaves turned downward toward the Quantum Sea, like a layer of broad, flattened child faces. Farr reached down to pluck another leaf.

Dura, laughing, restrained him. "Take it easy. Don't strip the whole damn tree."

Around a full mouth Farr said, "It's delicious."

She nodded. "I know. But it won't fill your belly. Not unless you really do strip the tree. That's why we have to hunt the Air-pigs, who eat the leaves—and the grass—for us." She pursed her lips. Then, in a tone suddenly and, to Farr, shockingly similar to their lost father's, she said, "Let's have a little lesson. Why do you think the leaves are so tasty?"

Farr thought about that. "Because they're full of protons."

Dura nodded seriously. "Near enough. Actually they are laced with proton-rich isotopes—krypton, strontium, zirconium, molybdenum... even a little heavy iron. Each nucleus of krypton, for instance, has a hundred and eighteen protons, while the tin nuclei of our bodies have just fifty each. And our bodies need protons for their fuel." The heavy nuclei fissioned in human stomachs. Protons combined with neutrons from the Air to make more tin nuclei—that was the most stable nucleus in the Air—and gave off energy in the process. "Now. Where does the proton-rich material come from?"

"From the Crust." He smiled. "Everyone knows that."

The Crust, no more substantial than Air, was a gossamer solid. Its outermost layer was composed of iron nuclei. Further in, steepening pressures drove neutrons into the nuclei of the solid, forming increasingly heavy isotopes... until the nuclei became so soft that the proton distributions began to overlap, and the neutrons dripped out to form the Air, a superfluid of neutrons.

"All right," said Dura. "So how do the isotopes get all the way from the Crust to these leaves?"

"That's easy," Farr said, reaching to pluck another succulent leaf. "The tree pulls them down, inside its trunk."

"Using veins filled with Air. Right."

Farr frowned, feeling his cheeks bulge around the leaf. "But why? What's in it for the tree?"

Dura's mouth opened and closed, and then she smiled, her eyes half-closed. "That's a good question," she said. "One I wouldn't have thought of at your age... The isotopes make the leaves more opaque to the neutrinos shining out of the Quantum Sea."

Farr nodded, chewing.

A flood of neutrinos, intangible and invisible, shone continually from the Sea—or perhaps from the mysterious Core deep beneath the Sea itself—and sleeted through the vortex line through the bodies of Farr and the other humans as if they were ghosts, and through the Crust to space. The trees turned slightly neutrino-opaque leaves to that unseen light absorbing its energy and turning it into more leaves, branches, trunk. Farr pictured trees over the interior of the Crust, straining toward the Sealight with their leaves of krypton, strontium and molybdenum.

Dura watched him eat for a moment; then, hesitantly, she reached out to ruffle his hair. "I'll tell you a secret," she said.

"What?"

"I'm glad you're here."

Briefly he considered pushing her hand away, of saying something funny, or cruel, to break up the embarrassing moment. But something made him hold back. He studied her face. It was a strong face, he supposed, square and symmetrical, with small, piercing eyes and shining yellow nostrils. Not beautiful, but with something of the strength of their father; and now with the first lines of age it was acquiring a bit more depth.

But there was uncertainty in that face. Loneliness. Indecision, a need for comfort.

Farr thought about it. He felt safe with Dura. Not as safe as when Logue was alive... But he thought ruefully, as safe as he would ever feel again. Dura wasn't really all that strong, but she did her best.

And this moment, as the others moved away from them, being together and talking quietly and tasting the leaves, seemed to be important to her. So he said, gruffly: "Yes. Me too."

She smiled at him, then bent to pluck a leaf for herself.

Adda slid silently through the treetops, following the circumference of a rough circle twenty mansheights wide. Then he moved a little further up into the suspended forest, working parallel to the lines of the trunks. The trees grew along the Magfield flux lines, and he kept his spear pointing along the Magfield as he worked his way along the smooth bark.

Save for the low, tinkling rustle of the leaves, the subdued talk of his companions, he found only silence.

He pulled himself back along the length of the tree trunk to the inverted canopy of leaves. None of the Human Beings—except, maybe, Logue's boy Farr, who was looking a little lost—had even noticed he'd been absent. Adda relaxed a little, munching on the thin, deceptive, tasty meat of a leaf. But he kept his good eye wide open.

The Human Beings were bunched together around one trunk, nibbling leaves desultorily and clinging, one-handed, to branchlets. They were huddled together for warmth. Here, where the Air was attenuated by height, it was cold and hard to breathe: so hard, in fact, that Adda felt his reflexes—his very thinking—slowing down, turning sluggish. And it wasn't as if he had a lot of margin in that area, he reflected. It was as if the very Air which drove his bones was turning to a thin, sour soup.

The boy Farr was crouched against a section of bark a mansheight or so from everyone else. He looked as if he were suffering a bit: visibly shivering, his chest rising and falling rapidly in the attenuated Air, his hands pushing leaves into his downturned mouth with an urgency that looked more like a craving for comfort than for food.

Adda, with a single flip of his legs, Waved briskly over to the boy; he leaned toward Farr

and winked with his good eye. "How are you doing?"

The boy looked up at him, lethargic despite the shivering, and his voice, when he spoke, was deepened by the cold. "I can't seem to get warm."

Adda sniffed. "That's the way it is, up here. The Air's too thin for us, see. And if you go higher, toward the Crust, it gets thinner still. But there's no need to be cold."

Farr frowned. "What do you mean?"

For answer Adda grinned. He raised his spear of hardened wood and aligned it parallel to the tree trunk, along the direction of the Magfield flux lines. He hefted it for a few seconds, feeling its springy tension. Then he said, "Watch and remember."

The boy, eyeing the quivering spear with wide eyes, scrambled back out of the way.

Adda braced himself against the Magfield. With a single movement—he remained lithe in spite of everything, Adda congratulated himself—Adda thrust the spearpoint deep into the bulk of the tree. The first stab took the spearpoint through the bark and perhaps a hand's length into the wood. By working the haft of the spear, twisting it in his hands, Adda was able to drive the spear further into the flesh of the branch, to perhaps half an arm's length.

That done, feeling his chest drag at the thin Air, Adda turned to make sure Farr was still watching. "Now," he rasped. "Now comes the magic."

He twisted in the Air and placed his feet against the branch, close to the line of his half-buried spear. Then he bent and wrapped both hands around the protruding shaft of the spear, squatted so that his legs were bent and his back was straight, and heaved upward, using the spear as a lever to prize open the wood of the branch.

...Actually it was a long time since he'd done this, he realized a few heartbeats after starting. His palms grew slick with superfluid sweat, a steady ache spread along his back, and for some reason the vision of his good eye was starting to tremble and blur. And, though the spear bowed upward a bit as he strained, the branch did little more than groan coldly.

He let go of the spear and wiped his palms against his thighs, feeling the breath rattle in his chest. He carefully avoided eye contact with the boy.

Then he bent to the spear again.

This time, at last, the branch gave way; a plate of it the size of his chest yielded and lifted up like a lid. Adda felt his aching legs spring straight, and he tumbled away from the branch. Quickly recovering his dignity, he twisted in the Air, ignoring the protests from his back and legs, and Waved back to Farr and the opened branch. He looked down at his handiwork appraisingly and nodded. "Not as difficult as it looks," he growled at the boy. "Used to do this one-handed... But trees have got tougher since I was your age. Maybe something to do with this damn spin weather."

But Farr wasn't listening; he crept forward to the wound in the branch and stared into it with fascination. Close to the rim of the ripped bark the wood was a pale yellow, the material looking much like that of the spear Adda had used. But further in, deeper than a hand's length, the wood was glowing green and emitting a warmth which—even from half a mansheight away—Adda could feel as a comforting, tangible presence against his chest. The glow of the wood sparkled against Farr's face and evoked verdant shadows within his round eyes.

Dura, Logue's ungainly daughter, joined them now; she shot a brief smile of thanks to Adda as she crouched beside her brother and raised her palms to the warmth of the wood. The green fire scattered highlights from her limbs and face which made her look, Adda thought,

charitably, half-attractive for once. As long as she didn't move about too much and reveal her total lack of grace, anyway.

Dura said to Farr, "Another lesson. What's making the wood burn?"

He smiled at her, eyecups full of wood-glow. "Heavy stuff from the Crust?"

"Yes." She leaned toward Farr so that the heads of brother and sister were side by side over the glowing wood, their faces shining like two leaves. Dura went on, "Proton-rich nuclei on their way to the leaves. The tree branch is like a casing, you see, enclosing a tube where the pressure is lower than the Air. But when the casing is breached the heavy nuclei inside undergo fission, decaying rapidly. What you're seeing is nuclei burning into the Air..."

Adda saw how Farr's smooth young face creased with concentration as he absorbed this new bit of useless knowledge.

Useless?

Well, maybe, he thought; but these precious, abstract facts, polished by retelling and handed down from the earliest days of the Human Beings—from the time of their expulsion from Parz City, ten generations ago—were treasures. Part of what made them human.

So Adda nodded approvingly at Dura and her attempts to educate her brother. The Human Beings had been thrust into this upflux wilderness against their will. But they were not savages, or animals; they had remained civilized people. Why, some of them could even read; a handful of books scraped painfully onto scrolls of pigskin with styli of wood were among the Human Beings' principal treasures...

He leaned toward Dura and said quietly, "You'll have to go on, you know. Deeper into the forest, toward the Crust."

Dura started. She pulled away from the trunk-wound, the light of the burning nuclei shining from the long muscles of her neck. The other Human Beings, a few mansheights away, were still clustered about the treetops; most of them, having crammed their bellies full, were gathering armfuls of the succulent leaves. She said, "I know. But most of them want to go back to the camp already, with their leaves."

Adda sniffed. "Then they're damn fools, and it's a shame the spin weather didn't take the rest instead of a few with more sense. Leaves taste good but they don't fill a belly."

"No. I know." She sighed and rubbed the bridge of her nose, ran a finger around the rim of one eyecup absently. "And we have to replace the Air-pigs we lost in the spin storm."

"Which means going on," Adda said.

She said with a weary irritation, "You don't need to tell me, Adda."

"You'll have to lead them. They won't go by themselves; folk aren't like that. They're like Air-pigs: all wanting to follow the leader but none wanting to lead."

"They won't follow me. I'm not my father."

Adda shrugged. "They won't follow anyone else." He studied her square face, seeing the doubts and submerged strength in its thin lines. "I don't think you really have a choice."

"No," she sighed, straightening up. "I know." She went to talk to the tribesfolk.

When she returned to the nuclear fire, only Philas, the widow of Esk, came with her. The two women waved side by side. Dura's face was averted, apparently riven with embarrassment; Philas's expression was empty.

Adda wasn't really surprised at the reaction of the rest. Even when it was against their own damn interest, they'd snub Logue's daughter.

He was interested to see Philas with Dura, though. Everyone had known about Dura

relationship with Esk; it was hardly the sort of thing that could be kept quiet in a community reduced to fifty people, counting the kids.

It had been against the rules. Sort of. But it was tolerated, and hardly unique—as long as Dura obeyed a few unspoken conventions. Such as restricting her reaction to Esk's death, keeping herself away from the widowed Philas.

Just another bit of stupidity, Adda thought. The Human Beings had once numbered in the hundreds—even in the days of Adda's grandfather there had been over a hundred adults—and maybe then conventions about adultery might have made sense. But not now.

He shook his head. Adda had despaired of Human Beings long before Farr was born.

"They want to go back," said Dura, her voice flat. "But I'll go on. Philas will come."

The woman Philas, her face drab and empty, her hair lying limply against her angular skull, looked to Adda as if she had nothing left to lose anyway. Well, he thought, if it helped the two women work out their own relationship, then fine.

Some hunting expedition it was going to be, though.

He lifted his spear.

Dura frowned. "No," she said. "I can't ask you to..."

Adda growled a soft warning to shut her up.

Farr straightened up from the burning pit. "I'll come too," he said brightly, his face turned up to Dura.

Dura placed her hands on his shoulders. "Now, that's ridiculous," she said in a parental tone. "You know you're too young to..."

Farr responded with bleated protests, but Adda cut across him impatiently. "Let the boy come," he rasped to Dura. "You think he'd be safer with those leaf-gatherers? Or back at the place where the Net used to be?"

Dura's anxious face swiveled from Adda to her brother and back again. At length she sighed, smoothing back her hair. "All right. Let's go."

They gathered their simple equipment. Dura knotted a length of rope around her waist and tucked a short stabbing-knife and cleaning brush into the rope, behind her back; she tied a small bag of food to the rope.

Then, without another word to the others, the four of them—Adda, Dura, Farr and the widow Philas—began the slow, careful climb toward the darkness of the Crust.

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