

Primrose and Thorn

Bud Sparhawk

*"Build me straight,
O worthy Master!
Stanch and strong, a goodly vessel,
That shall laugh at all disaster,
And with wave and whirlwind
wrestle!"*

The Building of the Ship, *Henry Wadsworth Longfellow*

"Why did I ever listen to you about *this* race? I already spend a bunch right here on Earth," protested Jerome Blacker, president of JBI. "I've been having second thoughts about this Jupiter race."

The two tanned and muscular people facing him looked uneasy. A sales tag was still attached to the man's sleeve and flapped as he waved his hand while speaking. "You already made the commitment, JB—you just have to follow through. Come on, it doesn't cost you any real money."

"You sure as hell aren't much of a businessman if you think this won't cost me anything!" JB said nastily.

"Mr. Blacker," Pascal interrupted, "the publicity about this race will bring in more than enough to offset expenses."

Jerome leaned across the desk. "What about insurance, the cost of transport, the cost of the boats? Those things aren't cheap!"

Pascal sighed. "The funds from the Jovian ventures can't be spent on Earth. Thanks to the treaty of '54, you have to reinvest at least 75 percent of your profits."

Jerome winced. "Don't remind me about those damn pirates! If it hadn't been for my stations and hubs, the damned Jovians wouldn't have a pot to piss in," he grumbled.

Pascal continued his attack. "GeoGlobal and the Times cartel are both outfitting ships for the race. No telling how many the Jovians are going to enter themselves. If we don't race, JBI will lose a lot—the publicity about our entry will bring in more than enough revenue to cover our expenses."

Jerome mused, half to himself, as he rubbed his chin. "I remember your numbers, I've read the reports. So be it. What do I have to do to finalize the financial arrangements?"

Pascal spoke slowly, not wishing to reveal how anxious he was to get JB's approval. "I've already reserved *Thorn*, a used barkentine. You just need to sign the commitment for outfitting her. Once that's done, the orbital factories will start fabricating the sails—we've already sent them our specs. We'll use the Jovian funds for both of those efforts. The only cash outlay you need to worry about will be our transport out to Jupiter."

"Which leaves only the human element," Jerome said. "Even now I find it hard to believe that we can win this race." He swiveled in his chair to face the woman who sat beside Pascal. She was the best captain in his fleet and winner of more sailboat races than he could count. She'd been unusually quiet since she came in the office.

"Do you think you can race one of those barques, Louella?" he asked her quietly. "Do you think you can sail a boat on the seas of Jupiter?"

Pascal held his breath as he awaited her answer. The success of their entire enterprise, and the payoff for the past year's worth of intense training, rested on her reply. The answer she gave would make or break the deal.

"I could sail a fucking bathtub on the Sun if the price was right," she spat back. "Now how the hell do I get a drink around here?"

Rams had stopped at the station in the hopes that there would be an opportunity for business. That, and a chance to restock his supplies. In order to keep his ship, *Primrose*, he had to take advantage of every opportunity that came his way.

Jake, an irritable old scamp who knew everything there was to know about sailing the winds of Jupiter, had taught Rams how to sail. Rams learned that every ship had its own personality. He learned how to balance keel and ballast, how to adjust the ship's buoyancy to ride the turbulence.

After teaching him the basics of sail, rudder, keel, and line, Jake went on to show him how to heave-to in the hurricane-force winds so that they would ride easily, neither making way nor being blown back. They'd used that technique to mine the edges of Jupiter's storms. The updrafts in these dangerous hurricanes often pulled metal-rich meteorites and icebergs—worth their weight in gold to the floating stations—from the lower depths of the atmosphere. Jake showed him how to "cheat" the boat close to the edges of the turbulence, using jib and main to close in on these bits of rock and harvest them.

Jake had shared all of his secrets of playing the winds of Jupiter's storms and winning its rewards. Jake taught Rams to love the winds on the wine-red seas.

Rams's transition from crewman to ship's captain hadn't been easy. He'd scrimped and saved every cent he could, and signed away nearly all of his future profits—all to buy a fast, outdated clipper at one of JBI's auctions. Clippers had been deemed too inefficient to achieve JBI's "acceptable" level of profitability.

Refitting the boat and replacing the instruments that *Primrose's* former crew had stripped put him even further in debt. In addition, there had been the outlay for new sails and refitting the keel. Both cost more than he expected and, suddenly, his debt for *Primrose* started to look like a financial black hole from which there was no hope of escape.

His first year had been a disaster. The cargo he'd hauled hadn't generated enough to pay the interest on his loans. To keep from losing her he borrowed even more. If he wasn't careful he could lose *Primrose* and be thrown in jail—that was the penalty for simultaneously using her as collateral for multiple loans. Since then it had been nip and tuck, keeping one financial step ahead of bankruptcy.

The second year of operations had taught him where the good money could be earned—carrying perishable goods on quick dashes. JBI's huge, lumbering cargo ships could move things cheaply, but they were neither speedy nor very maneuverable. Like the old square-riggers of Earth, they flew with the wind, stolid as the stations, and scarcely moving much faster. Sometimes their crew endured months between station-falls.

Rams usually got the best return when he had to make a darting emergency run from station to hub and back. Double charges both ways, and no hassle for it, either! Best of all, the fees kept him out of prison.

"Wind one-thirty meters per second and rising, Cap'n. Satellite shows some deep turbulence spinning off the edge about twelve thousand clicks upwind and heading to intercept your destination. Weather advises you should try to stay within the central laminar flows of sub-bands MM and KK until you're almost to Charlie Sierra One. That should keep you out of the storm," the station master said.

"Put it down that I acknowledge the limits on bands MM and KK," Rams replied as the 'master logged his ship out. "How much margin does Weather give me before that storm hits?"

"Best they can project is that you have about a sixteen-hour margin, give or take six hours. Of course, if it swings south of CS-42 the edge winds might give you a lift."

"When did I ever see one of those storms change course in a way that would help me?" Rams asked rhetorically. "I'll plan on beating the weather the last leg of the trip. I just hope that Weather's prediction is right."

"I agree with that," the 'master replied. "You'd better keep a watch for any miners who might be prospecting on the periphery of the storm."

Wouldn't want to run into one of those crazies, would you?"

Rams grinned, remembering when he had been one of those crazies. "I'll watch out for them," he promised.

"Well, it looks like you are all set to go, *Primrose*," the station master said as he popped the record from the computer and handed it to Rams. "Fair winds and good passage, Cap'n."

Rams checked the ballast tank when he returned to the ship. According to the leveling mark on the wall of *Primrose's* berth, she was riding low—just a little too heavy probably from the extra cargo he'd taken on. He switched on the heaters in the ballast tank. That would create enough steam pressure to drive the excess ballast out, lightening the ship. When *Primrose's* bull's-eye was almost up to the mark, he turned the heater off. In a few moments more she was floating level with the station.

"Ready to cast off!" Rams said over the intercom. He listened for the 'master to loose the clamps that held *Primrose* in the station's embrace. Four loud bangs resounded through the pressure hull as the clamps released. Rams immediately felt the ship list to starboard as she drifted backwards into the fierce winds of Jupiter.

Primrose heeled as it caught the full force of the wind. Rams braced himself, checked the instruments, and then turned the ship downwind as it emerged from the lee of the station,

The station's infrared image quickly faded as they exceeded the viewer's range. A few seconds later the sonar return vanished as well. Only a fuzzy radar image, quickly dissolving into a cloud of electronic noise, told him where the station rode. Even that image would fade once he got more than a kilometer away. After that he'd be sailing blind.

Primrose ran with the wind as he lowered the keel. He pointedly ignored the keelometer as the diamond mesh ribbon uncoiled from its housing. The thousand-ton weight at the keel's end started its familiar swinging motion as the keel was unwrapped from its spindle. *Primrose* rocked in response to the motion. The pendulum's swing slowed as the ribbon paid out farther and farther into the thick soup of the atmosphere.

Finally the rocking motion dampened and Rams halted the winch, locking it in place. Only then did he check the keelmeter. Although he relied more on the feel of the ship's trim when setting the keel depth, he liked to assure himself of the setting.

A single glance told him that his instincts had been correct. He'd halted the keel at 1,400 meters, one hundred meters shy of the theoretical setting the station master had calculated. He let an additional fifty meters of the mesh keel pay out; it wouldn't hurt to have *Primrose* a little bottom-heavy on an upwind run.

Rams reached for the sail controls. *Primrose* was being blown downwind at thirty meters per second, relative to the station. The station he'd just left plodded along *slower* than the wind, held back only by her massive drogues—a fancy word for sea anchors. The drogues that swung beneath the station's bulbous form created drag and provided a measure of control. It was sailing, but using anchors to steer instead of sails.

Rams hit the switch to release his mainsail from its housing on the main mast and braced himself. The ship tilted even further to starboard as the wind bit the suddenly increased surface area. He immediately played out the traveler, letting the main find the angle that would allow the fierce wind to flow across the sail's face. He kept a careful eye on the pressure gauges from both sides of the wishbone that constrained the sail, adjusting the sail's angle to maximize the front-to-back pressure differential. He wanted to get as much lift as possible from the airfoil effect.

Primrose finally stopped rocking and curved into the wind as Rams adjusted the line. *Primrose* was running at about sixty degrees to the wind when she finally balanced out and was making an appreciable sixty meters per second.

"All right, girl, let's show old man Jupiter what we can really do," he said, deploying the jib from its housing at the prow. There was a hellacious rattling from forward as the chain hoist protested the way the wind whipped at the small jib and smashed it against the pressure hull. Rams winched the line back until the jib sheets were taut and the small forward sail was funneling the wind along the back of the mainsail, forming a venturi between them.

Primrose heeled even more as the force on her increased from the additional sail surface exposed to the wind and turned tighter into the face of the wind. She was now running at about a forty degree angle. Rams grinned in satisfaction as her speed increased proportionally. He watched the knotmeter rise past seventy, seventy-five, and settle at nearly eighty meters per second.

He checked his location on the inertial positioning display and made a minor adjustment to the rudder, then adjusted both the mainsail and jib to account for the new angle of attack.

"Clipper Ship *Primrose* out at 1400 hours, under way and on course for Charlie Sierra Four Two," he said into the radio. The station master probably wouldn't be able to hear the formal sign-off, given the usual overwhelming amount of static in the atmosphere. Nevertheless, Rams was always careful to observe the formalities.

As *Primrose* pulled steadily away, Rams made a thorough examination of the ship. He wanted to ensure that everything on board was shipshape. He double-checked the straps and buckles on all of the cargo crates, just to make sure they'd been properly secured.

Next he checked the topside sail locker, taking care to see that the spare sails were properly stored and ready for deployment when the need arose. If all went well he wouldn't have to replace the sails on this trip, which would help his profit margin. Having them fabricated in orbit and brought down by elevator was bloody expensive.

He swung the power-lifters from their clamps and started working on the new sail. He strained against the resistance of the tough foil of the sail as he refolded it. Even so, he tried to keep from flexing the thin metal more than was necessary.

As soon as he had the sail properly folded and secured, he moved it into its canister. His arms ached as he struggled to get it into the correct position, cursing the financial situation that forced him to fire his crew three months before and the expediency that kept him from having the time in dock to do this sort of housekeeping. One person could barely cope with the bulky sails against the drag of Jupiter's heavy gravity. Even with the one hundred-to-one ratio of the lifters, he still had to depend on his own muscle to force the cumbersome rig into the canister.

Finally the sail was loaded. He stowed the lifters and rubbed his aching back before fastening the heavy chain lines at the head end of the sail; one line that would lift it into place on the mast and another to connect it to the traveler that limited a sail's movement across the top deck.

Whenever he had to blow the main its lines would go with it. The lines were another expense he wished that he could avoid. But the only way to save them was to suit up, climb out onto deck, and try to disconnect them while fighting hurricane force winds. Only a fool went outside without a backup crew, no matter how securely he was clamped to the deck! The lost money for lines wasn't as important to him as his life.

By the time Rams worked his way back to the cockpit, *Primrose* had moved far north of the station. From this position he could start to tack without the risk of running into it. Just to make certain of his clearance, he peered at the screen, cranking the radar to maximum sensitivity to check.

The screen showed a uniform blur of undifferentiated noise; not even a shadow that could be suspected of being something other than the swirling electronic mist of atmosphere.

Rams and *Primrose* were now completely on their own and, in five days, more or less, he hoped to see the faint, white heat signature of his destination. He hoped that the storm wouldn't spoil his plans—he needed the money to make the next payment!

"What a dump," Louella complained loudly. She threw her bag against the bare metal deck and watched as it lazily bounced back into the air. "Not even a bar on the place! To make matters worse I have to share the damned cabin with you. I can't even have some gods-be-damned decent privacy before the race!"

Pascal winced at the strident tone of her voice. He regretted accompanying her throughout the long voyage from Earth to the Jovian system. He should have come on another ship.

Louella's growing catalog of complaints had increased throughout the long transit from Earth. Thankfully, there'd been enough distractions on the transport to silence her complaints, once in the while. The transport had a bar to keep her amused, and enough willing young crew members to keep her bemused. But those diversions were short-lived. Too soon she came back to the fact that she wasn't racing, wasn't in control, wasn't at sea.

It made her bitchy.

"How the devil am I supposed to keep my sanity if they can't even provide civilized, *basic* amenities?" Louella continued in a rasping voice that cut across his nerves like fingernails on slate.

"Bad enough that I have to miss *three* seasons of the circuit for this fool race! Bad enough that we have to stay in this stupid can until the others get here! But that doesn't mean I have to live like some freaking *Spartan* in the meantime!"

She lifted the lid of the utilitarian toilet. "Jesus, we even have to share the damned can!"

"Perhaps you should complain to the hub master," Pascal said quietly as he floated across the tiny cabin and anchored himself with one hand. "Maybe he can provide whatever it is that you need."

Louella spun gracefully around on her hold and frowned at him. "What is that supposed to mean?"

Pascal winced again. What had he said *now*? It didn't matter; she'd be hell to live with if he just let it be. "Nothing," he said. "I just thought that maybe the captain has resources we don't know about. It wouldn't hurt to ask."

"Humph," Louella huffed, as if unsure of the meaning of his answer. She kicked her floating bag into some netting to secure it. "You've got the bunk beside the door, asshole. And don't get any ideas about us sleeping together." "I wouldn't dream of it," Pascal replied dryly and turned to fiddle with the controls on the wall. Under his breath he added, "Nightmares, perhaps, but not dreams." He pressed the switch to open the viewport.

"What did you say?" Louella asked sharply. "Something I wasn't supposed to—oh my god! Would you look at that!" Pascal didn't answer, he was as awed by the sight as she.

Framed in the viewport was the entirety of Jupiter, half orange, rose, and umber, and half in darkness. The rim of the planet filled the 'port from top to bottom, leaving only a narrow circle of stars at the edges to show that anything else existed in the heavens.

The bright line of the elevator cable extended from somewhere beneath the window and ran straight toward the planet's equator, far below, just as it extended thousands of kilometers out into space from this geosynchronous station. The cable's silvery line narrowed as it diminished into perfect perspective toward the giant planet.

Jupiter's great red spot wasn't visible. Pascal assumed that it was either on the other side of the planet or somewhere within the semicircle of darkness that marked the night side of Jupiter. But there were enough other large features present to occupy the eye.

Wide bands of permanent lateral weather patterns ran across Jupiter's face. Each showed feathery turbulence whorls at the edges as they dragged on the slower bands toward the equator or were accelerated by faster ones toward the poles. From here he could easily see the separations between them.

In the center of one of the higher latitude bands there was a dark smudge. Pascal thought it might be the persistent traces of the "string of pearls" comet, over a hundred years ago, but he wasn't sure. He couldn't remember if the marks would be on top or bottom from his viewpoint. He decided to ask the hub master about orientation.

"What a sight," Louella whispered as she moved beside him. "Gorgeous, just gorgeous," she said, with a touch of awe. "Where are the floating stations? Could we see them from here?" she asked quickly and pressed closer to the viewport.

Pascal dismissed her inquiry with a shrug. "The stations are too small to see from here. You're still thinking in terms of Earth. We're over six hundred times farther out than one of the orbiting stations would

be at home. CS-6 would have to be the size of Australia for you to see it with your naked eye.

"You've got to remember that each one of those weather bands is several thousand miles across," Pascal continued as he backed away from the view-port and the terrifying precipice it represented. "We could put the entire Pacific inside any one of them and still have plenty of room left over."

Louella's face took on a rapt expression as she absorbed the scale of what she was observing. "You could sail forever in those seas," she breathed heavily. "Forever."

Rams encountered his first problem when he was thirty hours under way. *Primrose* had been beating steadily to windward since he left CS-15. By his projections they should have been slightly north of the projected track of CS-42, the next station in line. This leg of his upwind trip would be two thousand kilometers long before he came about and headed south on the shorter lee leg. That was as far as he could travel and stay within the limits Weather had advised. He couldn't go beyond the MM sub-band without risking excessive turbulence. No, he thought, it was better to keep to the smooth and dependable jets of air in the middle of the band.

It was no small effort to steer *Primrose* between the two stations. CS-15 had been moving westward at a steady twenty-six meters per second under the slower westward winds of the KK sub-band.

The two stations had been about eight thousand kilometers apart when he had departed. He had planned to tack about eight times across the face of the wind; four 2,000-kilometer legs to the north and four 3,000-kilometer legs to the south. The southern tacks would gain him the least progress but give him good position to intercept the station as it raced toward him.

It was a good sail plan. The only problem was that it wasn't working out. The inertial guidance system indicated that, instead, he was steadily bearing west of his projected course. Rams checked the set of the sails and the pressure readings. Using these numbers, he calculated that *Primrose* was still bearing forty degrees to the wind, just as he had planned. What could be wrong? Was he being blown off course by an unexpected head wind?

An hour later he understood the situation. Something was disturbing the "smooth laminar flow" predictions of Weather. He just encountered a more northerly wind than expected. He decided to adjust his tacking strategy to adapt to the shift. He'd have to take a longer line on the southern tack. But the slower passage would put him at risk from the storm, which could mean big trouble.

He plotted his course for the next ninety hours with great care.

As they sped down toward the seas of Jupiter, Pascal sat as far from the port of the tiny cab of the elevator as he could and tried to ignore the pit of blackness, a hole in the sky at the center of an enormous emptiness. The thought of all the distance they had to fall terrified him.

"I still don't understand how you guys do it," the pink-faced elevator pilot said from his perch at the bow. "I mean, I can see how a sailboat can go with the wind. The hot air balloons on Earth just go with the wind, right? Why wouldn't they do the same here?"

"It's the keel," John said. He and Al were their competitors from GeoGlobal. They'd arrived a few days before, along with the third crew that would participate in the race. "A sailboat would be just like a balloon if it didn't have a keel."

"Oh, I see. That's why the Jupiter ships have that long ribbon under them," the pilot remarked. "But how does that help them move against the wind? And isn't it impossible to go

faster than the wind?"

"Good question," Pascal said, glad of the distraction. "A sailboat goes faster into the wind, not slower. The slowest speed of all is when you run with the wind directly behind you."

Pascal let the kid think about that for a moment before he continued. "A sail is an airfoil. One side forms a pocket of relatively dead air. The opposite side is bent out so that the wind has a longer distance to travel. The pressure differential pulls the sailboat along."

"A foresail funnels the air across the main and accentuates the effect," Al injected. "The closer you haul to the direction of the wind the faster you go."

John spoke up, "It's just a matter of physics: the angle of force on the sail and the keel produces a vector of force that moves the boat forward. The steeper the angle the greater the forward thrust. The trick is to balance the force of the wind and the sails, adjusting your angle of attack to obtain the greatest forward momentum possible, maximizing the transfer of static air pressure to dynamic motive force."

"Oh, I understand," the operator said, screwing his face up in concentration. "It's like continuously solving a set of differential equations. " He smiled at them as if he were proud of learning the lesson so well.

"Don't bust a gut trying to do that if you're ever in a sailboat, kid," Louella said. "It's all scientific bullshit."

Louella glared at the three of them; a fierce set to her eyes and mouth that brooked no interruption. "These guys want you to think that sailing's a science—that it's all application of mathematical rules and physics. Listening to them, you'd think that you're constantly thinking, calculating, and plotting. Well, that's all a pile of crap—sailing isn't some branch of engineering."

She leaned forward to look straight into the operator's eyes, her expression softening as she did so. "Sailing's a love affair between you, the boat, the water, and the wind. Every one of them has to be balanced, held in check; let any one of them dominate and you've lost it. A good sailor has to be conscious of wind and water and responsive to the boat's needs. You have to understand the language of wind and sea and ship—you have to feel that *edge* that means you're running a tight line with every nerve of your body. The boat'll tell you how she wants to behave; she'll fight you when you're wrong, and support you when you're right."

She brushed at her cheek, as if something had gotten in her eye, before she continued. "The point I'm trying so damn hard to get across to you is that sailing is an art, not a bloody damn science. That means you have to sail with your heart, as well as your mind. When you're on the sea, managing the sails and the wheel, the rest of the Universe could disappear, for all that you care. When everything works right, there's a rhythm, a reverie that transforms you, that makes you one with the Universe. If you put everything you have into it, mind and body, your ego disappears—its just you, the boat, the wind, and the water."

She turned back to stare out the viewport at the advancing planet and slumped into her seat. "If it was just science, JBI wouldn't be paying the big bucks to haul my ass all the way out here. No, they'd get some double-dome Ph. and D. to build a little machine to do it, and the hell with the beauty of a good line and a strong wind.

"But the fact that I am here to sail on Jupiter's orange seas says that there's still a human element to sailing that's better than the most refined engineering approach. It says that a human being can still stand on a ship's deck and dare the wind and the seas to do their worst. It tells me that even some damn overgrown pig of a planet can't tame the human spirit!"

The silence prevailed for long minutes. "Well," said Al, apropos of nothing. "Well."

Louella said nothing for the rest of the trip down into the thick atmosphere. Pascal tried to ignore the view as sunrise raced across Jupiter's face, too far below.

Rams's destination was floating along at twenty-odd meters per second to the east of his present position. Her track was so reliably managed that the station's precise location could be calculated to within a kilometer.

Somewhere on the other side of CS-42 a whirling hurricane was advancing. Given the right spin and direction these storms could grow beyond reasonable bounds, turning into blows that made Earth's hurricanes look like a faint puff of air. Ninety-nine times out of a hundred Jupiter's hurricanes dissipated quickly, within two or three of his ten-hour rotations. If Rams was lucky, this one would do the same.

Rams was dismayed to discover that *Primrose* fell even farther westward off of her planned track whenever he turned to the north. That meant two things: the winds were continuing to shift, and the storm was deeper than expected. It looked as if he'd hit the edges of a major storm.

For the thousandth time he wished that Jupiter wasn't so electronically active. The ambient white noise on the radio bands was so intense that even pulse-code modulation couldn't punch a signal through. Just one crummy satellite picture, one quick radar image, one short broadcast was all he'd need to find out what was happening with the storm.

Instead, all he knew about the storm was its rough starting position, Weather's predicted track, and the data the station master provided about prevailing winds. He also had the data from his own inertial system. From those weak components he had to navigate through a dark eight thousand kilometers, face unknown winds, and find the tiny station that was his destination

"A little bit cramped, isn't it?" Pascal remarked as they inspected *Thorn*, their tiny, nine-hundred ton, double-masted barque. He sat with one leg extended into the cockpit and the other in the "stateroom," which also served as kitchen, bath, and bedroom. A single bunk stretched for two meters across the overhead with a single small seat below, which, when lifted, revealed the toilet. A tiny shelf with a built-in microwave oven and a recessed sink—hidden under the working surface—ran along the second bulkhead, to the right. Their food and medical supplies were stored in hanging bags, Velcroed to the bulkhead above the microwave.

On the opposite bulkhead was a fold-down table whose opened edge would be in the lap of whoever was sitting on the seat. The navigation instruments, computer, and the storage for charts and instruments were revealed when the table was down. Rams could reach out with his left arm and just about touch the edge of the helmsman's seat, it was that close. For a big boat *Thorn* had mighty small crew quarters.

"Maybe we shouldn't have picked a cargo hauler—it's a little cramped, isn't it?" Louella remarked as she ducked her head to peek into the compartment. "Place looked a lot roomier in the plans. I guess the crew wasn't supposed to stay aboard for more than a day or two."

Pascal looked around. "Why couldn't they convert some of that cargo hold? This is pretty tight. I don't relish spending a couple of weeks in here." "Too much trouble just to give us a little bit of comfort. I don't think the expense would be worth it—might upset the boat's balance."

Pascal sighed and wiggled in the tiny seat, trying to find a way to stretch his legs full length, and failed. "The navigator's station on the Bermuda run was bigger than this," he complained. He tried to put his

arms out and his right elbow hit the hanging bags. He sighed again—this was going to be damned uncomfortable.

"Yeah, but you weren't nearly as warm and dry," Louella reminded him. "I don't mind cramped spaces during a race. Hell, on most of our races, dry underwear's a luxury! Count your blessings, Pascal. Count your blessings."

While Pascal squeezed up the narrow tube to examine the sail locker, Louella sat in the helmsman's seat. She let her hands run over the controls. She loved the slightly sticky feel of the wrappings on the wheel. Here and there she noted the faint, oily marks *Thorn's* captains' sweating hands had put there.

A bright, shining circle was worn into the dull metal beside the winch controls. She reached for a knob, as if to activate it, and noticed that the heel of her hand centered on the worn spot. How many hundreds of times had another hand briefly touched there to wear the finish like that, she wondered. How many captains had sat in this seat to guide the tiny craft across the dark seas of Jupiter? In her mind, those other captains were a palpable presence in the tiny cabin, a trace of the boat's memory. Directly in front of the helmsman's seat were the screens that displayed the fore and aft camera views. Their controls were in easy reach, just below them. To her left were the inertial display unit, the pressure gauges, and various station-keeping controls. The housekeeping controls were mounted beneath the seat, where they could be reached from the stateroom.

On a swing arm above the wheel were the primary control readouts: sail pressure gauges, wind indicator, barometer, and dead reckoning display. Once they were under way she'd be completely dependent on them.

There was a clatter as Pascal wormed his way out of the tube. "Sail sets look OK," he said, as he slid across the deck and dropped into the stateroom's seat. "We've got spares for every sail, plus the extras that you ordered. All of them are marked and set for loading."

"Did you make sure that we have enough lines? I don't want to get caught short on tack once we get out of here."

Pascal snorted. "Of course I checked. My butt's going to be out there too, you know."

Louella nodded, all business. "I double-checked the inspection reports. Just the same we need to do a walk-around."

She'd said it so calmly that Pascal *almost* missed the implication of what she had said. When he did, he snapped erect, banging his head on the bottom of the bunk.

"Y . you mean . go outside?" he blurted.

Louella sneered at him. "Sure. We can get some pressure suits and hand lights to work with. As long as you stay in the dock you won't have any problems. It will be just like going for our training stroll at geosynch. You didn't have any problems there, did you?"

Pascal stuttered. He'd been scared out of his wits the whole time, worrying whether his lines were securely attached, worrying about the ability of his boots to hold fast to the deck, worrying about slipping, about the vast distance that he would fall should he become detached from the station.

"N . . . no," he lied.

They didn't need the hand lights after all. *Thorn* was still parked in the repair bay where there was plenty of external illumination. Louella held tight to her walker as she stumbled through the lock. The walker

took most of the weight off her legs, which was a blessing. Even though she didn't have too much of a problem with the two g's, the additional weight of the heavy pressure suit made movement difficult.

Pascal stumbled along behind her, clutching his own walker so tightly that it looked as if he'd leave glove marks in the metal.

"What a pig," Louella remarked as she examined the bulbous skin of *Thorn's* outer envelope. "Looks like a damned overgrown, pregnant guppy," she said as she walked along the side of the bulging hull, thinking of the sleek craft she had sailed in Earth's tame waters. Every few steps she stopped to examine a weld, a spot of suspicious discoloration, or one of the vents for the ballast hold.

"Let's take a look at her rigging," she demanded and followed the crew chief to the boat's deck.

Two stubby masts projected up from the center line of *Thorn's* upper surface. These were thick triangles of heavy metal, nearly six meters across at their thickest dimension. They certainly weren't the slender masts she'd known all her life.

The trailing edge of each mast was a pair of clamshells. These were double-locked doors that would open when they deployed the sails. A short track ran back from each mast, with a crosswise track at the end. "We extended the travelers on both sides, like you asked," the crew chief said. "You're goin' to have a bit of trouble handling her. Keep a tight hand on the wheel and don't run close to the wind, is my advice." Disapproval was evident in his voice. "Don't think you should have done that, though. These little boats ain't built to take much heel, y'know."

Louella bristled as she checked the workmanship on the track modifications, looking for any indication that the repair crew had scrimped on her specifications. "Did you think about adjusting the traveler's winches to take the extra line?"

The crew chief bristled. "Of course I did," he said gruffly. "I don't appreciate you sayin' that I don't know how to do my job."

"Really? Well, I don't like you telling me how to sail a boat either, asshole!" she shot back. She moved to examine the other mast as the crew chief licked his wounds.

While Louella and the crew chief were above deck, Pascal examined the hull. The keel had already been retracted from the meter-by-meter safety inspection. The huge weights at the ends of the double keel swung slowly from side to side as *Thorn* bobbed up and down. *Thorn* was just a balloon when she wasn't under way. The keels' slender foils hardly seemed strong enough to support the three hundred tons of droplet-shaped weights. The blunt nose of the forward weight was smooth and bright, as if it had been polished. There were several long gouges along the sides.

"Impact scars," the crewman said as she reached across the gap and shoved her glove inside one of the larger ones. "There's always some gravel being driven around the atmosphere, especially down deep, where the keel runs. Sometimes they're pretty big and movin' fast. That's what made these dings, y'see."

Pascal was still staring at the thin ribbons that supported the weights. Each was only a few centimeters thick, hardly the width of his hand. One rip from a rough piece of gravel, he thought, and the ribbon could be severed and the weight would be released, dropping down into the depths far, far below.

Suddenly he realized that he was only one step away from the edge of the inspection platform. One step from a fall that wouldn't stop until he reached a pressure level that would crush and kill him,

compressing his suit and body into a tiny mass. He would still fall until it hit the layer of metallic hydrogen, hundreds and hundreds of kilometers below the station. No, that wasn't really true; he wouldn't fall that far. His body would come to rest somewhere where his density was equal to the surrounding atmosphere.

But he'd still be dead.

A wave of vertigo overcame him. He stumbled back from the dangerous precipice. "I ... I need to get back inside," he told his escort, clamping his hand on the safety line. "Now!" he shouted when the crewman didn't respond at once. He had to get away from that horrid drop.

Twelve hours later Rams realized that he was in serious trouble. Whenever he tried to head due north, he was forced farther west of his planned track. To be so affected at this distance meant that the storm was immense.

He prepared for the coming storm. The two things a sailor had to remember about surviving a storm, whether on Jupiter or on Earth, were either to be prepared, or be elsewhere. Rams began to go through *Primrose* and secure her. Even a small item flying about in a two-g field could do substantial damage.

The galley and his own cabin were easy. Rams made it a practice to stow everything until needed. Just the same, he went through every locker to make sure that nothing would fall out and surprise him. He poured hot tea into a thermos and stowed that, along with some bread, in the cockpit.

Securing the cargo hold occupied him for an hour. He put double lashings on all the containers, and tied them together, just to make sure. That done, he made certain that all loose lines were in the lockers, along with all of the deck gear. Nothing that could become a flying missile was left unsecured.

Since he wasn't carrying passengers this trip, the other four cabins were empty. Just the same, he checked them for loose gear or an open locker. He had to make absolutely certain they were secure.

Securing the sail locker presented a problem. Rams had to balance being able to hoist sail in a hurry—which meant he had to have one loose—against the risk of it breaking free. He secured the larger sails and kept the two small ones ready to hoist as a compromise. If the blow was as heavy as he expected, the small ones were more likely to be used.

That done, Rams brought the ship about to begin another long, southerly tack. That way he could use the peripheral winds to stay on the outer fringes of the storm. With a little bit of luck, *Primrose* wouldn't be drawn into its roaring core. Then he settled down to see what the long night would bring.

Thorn was six days out from the start and making way at a steady 150 mps. Pascal had already grown sick of the close quarters, the five-hours-on, five-hours-off schedule that matched Jupiter's rotational rate, Louella's lousy cooking (even if it was better than his own), the dragging load from Jupiter's gravity, and the lingering, stinking ammonia smell from the boat's slight atmospheric leakage.

They'd added their own contribution to the atmosphere. After nearly a week of confined quarters they had created a unique miasma. The cabin was redolent of recirculated air, collected flatulence, sweat, and the miscellaneous aromas that the human body produced. Only the ability of the human nose to filter out the worst of these protected him. Still, the smells remained, and, unfortunately, Pascal's nose sometimes forgot to ignore them.

He fidgeted at the wheel, keeping a wary eye on the instruments. It was important to maintain the sail's pressure differential right on the edge; that way they could keep their speed up. All week Louella had beaten his time. Somehow she was able to wrest a few extra knots from the wind. No matter how much he pushed, Louella was always able to do better.

They'd been competing ever since he could remember, each trying to outdo the other. She dared him to become a better sailor, even as she relentlessly strove to beat him every time. He challenged her to become the better navigator, and laughed at her struggles with simple plotting problems. She'd succeeded better than he, even if he never was able to offset her intuition with his science. Their teamwork had won numerous races over the years. Their success gained them prime berths in JBI's commercial racing fleet. Louella had worked her way from an Olympic dinghy championship at age thirteen to finally being the helmsman on most of JBI's Cup winners as well as the number one competitor in most of the other commercial classes.

Pascal had been recruited by JBI as a navigator for Louella's first Whitbread. Since then he'd been with her for every race, alternatively as navigator, tactician, winch crank, or sail master. He'd been helmsman when she was captain and shared bunk with her on the Times's double-around-the-world. They'd weathered hurricanes and drifted demasted for days with only a bottle of water to share between them. They'd broached a hundred thousand dollar racer in Frisco Bay, lost a two million dollar racer in the South Pacific, and survived to win the Bermuda in spite of a hurricane that destroyed half the fleet and shredded their mainsail to ribbons. It had been a thrill the whole time.

He just wished that she wasn't such a pain in the ass.

Louella came awake in an instant and checked her watch. She had managed to sleep for nearly five hours without being jarred awake. "Damn Pascal's eyes," she complained to herself as she fastened her truss. "He must be running safe again." That meant that she would have to make up for lost time during her watch, as usual.

She rolled out of the bunk, stepped cautiously to the deck and used the toilet, splashing a little water from the sink up her nose to counteract the dryness from the ammonia fumes.

"Tea's hot," Pascal called down to her in a voice heavy with fatigue.

"Thanks," she replied, looking for the thermos. "How did you find time to make it?"

"You mean how much progress did that cost us, don't you," he replied sharply. "Not a bit, I'm sure."

"Do you think that the competition's doing better? Damn, but I wish we had some way of telling where the other boats are!"

A week before everyone had set off from Charlie Sierra Six on the first leg of the Great Jupiter Race, as the press had been calling it. The first leg would take them around CS-15 and then back to CS-27, where they would come to windward and race downwind to CS-6, where they had begun.

Louella had watched the heat signature of their prime competitor fall to *Thorn's* lee when they came out of the shelter of the starting station, indicating that they had caught the vortex off *Thorn* and were spinning away to get good air. It was a trick most sailors learned before they left their cribs.

They had watched the diminishing white dot that represented the station fade into the background noise

as *Thorn* pulled steadily westward, their speed climbing the whole time under Jupiter's fierce winds. It was therefore a little disturbing to discover a heat signature steadily increasing in definition on their aft screen. Somehow one of the other boats had managed to catch a better wind cell than theirs.

Louella jibed to port, hoping to create a pocket of dirty air behind *Thorn* that would interfere with the other's progress. The white dot responded by immediately moving to starboard, long before they could have felt the effects of Louella's maneuver.

"Obviously they can see us better than we can see them," Pascal cursed as he tried to crank up the gain. "It's probably the wind blowing our signature backwards. Should we jibe again?"

Louella dismissed the idea; *Thorn* lost some momentum each time they jibed. "Let's concentrate on building up our speed," she replied, making some tiny adjustments to the set of the sails.

The image of the other boat faded to port and finally disappeared. They were six hours out from the start.

"What are they doing now?" Louella wondered aloud. "Could they have caught another favorable wind cell? Do you think they're starting their northward leg already?"

Pascal checked the inertial. *Thorn* was still a few hours from their planned turning point. "Let them go," he said. "Concentrate on our own course while I grab some sleep."

Pascal was having difficulty staying awake during his shift at the wheel. The days of five hour sleep cycles, bland food, and lack of exercise were taking their toll. On most of the long races on Earth he at least could stand on the deck, stretch, and get a breath of air to refresh himself. Down here, in Jupiter's atmosphere, he couldn't even stand upright, much less sniff the air blowing by outside the boat. Not that he'd want to, he hastily amended.

But it was dry, as Louella had said, and that was something. He recalled how he'd always hated the pervasive dampness, the clinging, sticky moisture that characterized every ocean race.

Thorn's trim felt wrong, as if she was lumbering in thick syrup, even though her speed was good. Perhaps, he thought, the boat would have a better feel if she rode a little higher, a little lighter.

He clicked on the heaters in the ballast hold. They had pumped nearly four tons of liquefied gas from the bottom of the keel into the ballast tank to set their present trim. The heaters would expand the liquid and force the ballast out. He turned them off after an hour, when the trim felt better.

On the seventh day of their run they rounded CS-15 on their port side and watched the vivid image displayed on their radar screen until it faded back into the ambient noise. Pascal had dutifully recorded the close passage, to prove that they had indeed rounded the mark, while Louella concentrated on keeping *Thorn* a safe distance away. To do so she maneuvered the winches to switch the sails from side to side, slipping a little to slew the craft about without losing momentum.

As much as they'd like to do so, there was no time to stop, and no way to find out whether the station knew that they had passed. They'd tried the radio, but the deafening noise of atmospheric static masked any reply.

"I wish we could find out which boats have already gone by," Pascal remarked as he stowed the log and climbed wearily into his bunk. He loosened the truss and breathed a sigh of relief.

"The hell with them," Louella answered weakly in a voice that revealed that she too was getting tired. "We just have to do the best we can and hope that the rest do worse. That's what racing is all about."

"Yeah, remember the last Whitbread—didn't see another boat the whole race. It was like we had the whole ocean to ourselves."

"Not much fun there. What I remember is sitting dead in the water for three days while the Sun baked us to a crisp; no wind, no progress. It was only luck that we caught the edge of that storm and got a boost."

"Won the race, didn't we? Luck falls to those with the most skill," Pascal said encouragingly.

"Let's just hope it works this time as well," she said dryly. "Now get some shut-eye so you can relieve me in two hours."

The rest of her watch passed without incident as she tacked at a twenty degree angle to the head wind. The new sails that they had deployed on day five were still serviceable and were probably good for another two days at least. There was a minor fluctuation in the barometer and Louella let the keel down a few hundred meters. She nearly fell asleep at one point, she was so tired.

Louella was the first to notice how their track was consistently deviating to the south. On the last two tacks they had strayed nearly fifty kilometers west of plan.

"Unless there are some different physics out there we can't possibly be heading like the inertial shows," she remarked with a nod at the instrument when Pascal crawled up to relieve her.

Pascal looked at the readout. "This thing's supposed to be foolproof. Maybe you're misreading it?"

Louella snorted in reply. "You check it yourself. I'm getting something to eat and then some shut-eye." She slid from the helmsman's perch, past Pascal, and into the stateroom. "See if you can figure out what's wrong."

Pascal kept an eye on the inertial throughout his shift. Sure enough, the southern legs showed the same deviation. If the machine was to be believed, then the winds were coming almost directly down from the north instead of following the westerly course that they had been told to expect.

He wished that he was thinking a little more clearly. Something kept itching at the edges of thought. Something someone had warned them about. What was it? He looked at the curving southerly trace that the inertial was showing and wondered. It almost looked like a smooth curve. . . Then he had it! A turbulence eddy must have formed along the edge. If the readout was right then they were already being drawn into its grasp. "Louella!" he shouted, "wake up! We have a bit of a problem."

Hours later the winds rocked Thorn from side to side as Louella fought to make way. Unlike the smooth air they had encountered thus far, the winds on the edges of the storm were rough, uneven gusts that quartered with little warning. In one stomach-wrenching instance, Thorn had turned completely about, while pitching nearly sixty degrees to leeward, reversing as the wind switched and slammed them in the opposite direction.

She knew that they'd lost the foresail, and suspected that the aft was in tatters. There was no possibility of hoisting new ones in these rough seas. Something in the sail locker had torn loose and was smashing around. Pascal would be taking his life in his hands if he tried to go into the locker. For good or ill, they

had to use whatever sail they had and hope that their skill, and no small amount of luck, would see them through.

"Can't even put out a damned sea anchor to steady her," she complained at one point. "How the hell do the sailors up here survive these storms, anyhow?"

"I think they are wise enough not to do something stupid like racing in a small boat." Pascal said dryly from the bunk where he had secured himself. "How are we doing?"

Louella checked the instruments. "As far as I can see we are straightening out our track somewhat. At least we aren't curving more."

"I hope that means we aren't getting sucked in. How big do you think this storm is?"

"No telling. I don't know how they scale these storms up here. Back home this would be called a one-million year storm, I'm certain. It's a monster!"

Another gust hit them on the side. Louella threw the switch to lower the keel, and their center of gravity, to give them some more stability. It was all that she could do.

The remnants of the aft sail blew away during Pascal's watch. The rocking of the boat stopped as it drifted with the wind. Since he now had no control over Thorn, he lashed the wheel in place and crawled into the sail locker. The only way they had of restoring some measure of control to the boat was to get another sail up.

The locker was a mess. The big specialty main that Louella had ordered for the finishing run had broken loose of its restraints and had swept the mountings clean off the deck. Bits of broken metal and plastic tie-downs were everywhere. A large dent on the bulkhead showed where the big sail had struck before it finally wedged itself behind the canisters.

Pascal stumbled over the wreckage and selected one of the smaller sails. He undid the lashings, trying to maintain his balance against the pitching motion of the boat. As he worked he kept a wary eye on the huge mainsail in case it began to roll his way.

Twice the boat moved unexpectedly and threw him against the stowed sails, smashing their blunt edges into his chest and back. He knew that he'd have massive bruises to show for it.

Finally, he secured the winch to the sail head and locked the cables in place. He braced himself between the sail and the bulkhead, using the pressure of his legs to hold himself in position and began the torturous process of ratcheting the sail into place. It took all of his energy to move it the last few centimeters.

Louella was awake and in the helmsman's seat when he poked his head out of the tube. "Sail ready?" she asked calmly, as if nothing was amiss.

Pascal nodded. "Aft mast, small set," he said quickly, thankful that she had not made an issue of his reckless actions. She was all cool control and professional when the race was on. "Brace yourself," she warned as she reached for the controls. "Release!" She threw the hoist switches to raise the sail as Pascal tightened the straps to hold him in the bunk.

Louella spun the wheel to bring the boat directly into the wind. The wind caught the edge of the new sail and pulled it the rest of the way out.

Louella adjusted the traveler. The wind filled the sail, throwing Thorn at a sharp angle. The boat heeled precariously and then leaped forward with a force that snapped Louella's head back against the headrest. She managed the trim of the sail, a matter more of feel than science, until the boat was riding steadily downwind, making steady progress. Thorn rode safely and secure in the teeth of the storm.

"That's the right thing to do," she said softly to the exhausted Pascal. "Good going, partner."

The relative calm following the storm was a blessing. Rams had managed to be blown only a couple hundred kilometers south of his planned track through a combination of his skill and considerable luck. All he had to do now was intercept the CS-42 track and pray that the storm hadn't forced her too far from the projected track in his computer.

Rams checked the sail one more time and then prepared to come about. It was time to head on a northerly leg. He buckled himself to the deck and released the hold-downs on the wheel. He felt a throb reverberate though the deck as the rudder cut into the dense soup, far below. He imagined it to be *Primrose's* heartbeat.

The hull began to sound a deep resonant note that echoed throughout the ship. "Damn harmonics," Rams swore. He retracted the keel until the sound disappeared. Left alone, the wind blowing across the keel would set up a destructive harmonic that could destroy the ship.

"Ready, girl," he whispered, turning the wheel ever so slightly to starboard. He put one hand on the port-side jib release and waited. *Primrose* rolled to the perpendicular and then shook as her prow came through the eye of the wind.

Rams hit the port-side release and switched on the starboard-side jib winch. In his mind's eye he could see the mainsail whipping across the deck, slamming the traveler to rest on the opposite side as it turned its port side to weather.

There was a clatter of chain against the pressure hull that stopped when the loose jib finally stretched taut. *Primrose* heeled and started to pick up speed on the downwind leg. Rams held the wheel loosely, searching for balance until he was confident that the ship had once more found her line. Only then did he lock the wheel into place and relax.

He unbuckled the restraints and started to pour the last cup of tea from his thermos when he stopped. Something was out of the ordinary, but he couldn't put his finger on it. Rams examined the instrument panel. Everything seemed to be in order; no red warning lights that would scream that the hull had been breached, no flashing indication that the rigging was damaged, no alarm telling him that some life-threatening life support system was malfunctioning. What could it have been?

Then the infrared display flashed again. Rams started in surprise. There, on the screen, was a white blob—a heat indication where there should be nothing but empty sky. A glance at the camera indicator told him that the blob was off his starboard bow, just at the edge of the imager's range.

Quickly he released the wheel and spun *Primrose* about, pulling the jib tight and letting it backwind, just as Jake had taught him. The winds buffeted the ship for a few seconds, rocking it from side to side until, finally, the motion subsided. The ship was close-hauled into the wind, the pressure on the reversed jib equal to the pressure on the loose main, and both constrained by the kilometers of keel beneath him.

He carefully turned the aft camera around, trying to find another indication of that heat signature. Several times he thought that he had it, but was mistaken. Stare at a screen of random noise long enough and you

are likely to see anything you want. He continued to search.

Then he had it. A definite heat source, and quite close too. The object was moving at about the same speed and direction as the wind.

They were so far off their planned track by watch change that neither of them could see how they could make up the lost time. "I don't see how the other competitors could have avoided the storm," Pascal remarked as he examined the charts and the trace on the inertial. "Surely they're in as bad shape as we are."

"Don't count on it," Louella snarled. "Most of them are tough sons of a bitch. Somebody probably figured out how to use this storm's winds to their advantage. I wouldn't be surprised to find that at least two of them have a good day's advantage on us."

"Oh, when did you become such an optimist?" Pascal asked bitterly.

"When I got you as a partner," she snapped back.

Pascal checked the trim while Louella snored in her bunk. Thorn felt sluggish—probably Louella had taken on more ballast, he thought. He switched on the heater to vent some of it and lighten the boat.

A sudden gust blew Thorn to the side. She tilted nearly forty degrees as the wheel whipped from side to side.

"What the hell?" Louella yelled from her bunk.

"I think the sail's gone again," Pascal yelled down at her. "Take the wheel while I get another one ready. "

Louella squirmed into the seat as Pascal dragged himself into the sail locker. Thorn was rocking steadily from side to side. She turned on the winch to let out more keel and steady the boat, letting out another hundred meters of mesh.

"Let's try the foresail this time," she yelled at Pascal's disappearing feet.

Pascal wiggled into the cramped space beside the sails and braced himself. He ached all over. No matter how he positioned himself, some bruised part of his body pressed painfully against something. He rigged the lines and gear until the red-tagged foresail was ready to be ratcheted into the loading compartment.

He carefully attached the pulley to the head end of the sail and began to crank it into place. With every turn of the winch his muscles ached. He banged his elbow on the bulkhead with each long stroke of the winch handle.

With a twenty-to-one ratio, it took a long time to finally get the sail into place—long enough for the forgotten heater to turn the entire ballast load into steam.

Back in the cabin Louella noticed the sideways motion of the boat. She immediately checked the pressure gauges, thinking the wind had switched unexpectedly. But that wasn't the problem; their heading was still good and the wind had settled down. Why then were they slipping sideways? She tried to clear her head and reason it out. She wished that she weren't so damn tired.

Then she noticed the blinking warning light above the heater switch. "Damn," she swore, "how did I miss

that?" and turned it off.

Pascal stuck his head out of the end of the tube. "Sail's all ready to go."

"Right, brace yourself," she responded and hit the winches to raise the sail.

Before she could react the ship moved violently to one side, throwing her from the seat and smashing her against the bulkhead. She didn't even have time to scream.

Pascal came painfully to full consciousness. His head throbbed and his side was a mass of agony, as if his ribs had been crushed. The first thing that he saw was Louella slumped against the bulkhead of the cockpit, her arm at an awkward angle. "She must have forgotten to buckle herself in," he mumbled and crawled to her. The pain in his side stabbed each time he moved.

Louella's pulse was all right, but her breathing was labored. He turned her to one side to relieve the front-to-back pressure from the two-g gravity. She moaned as he shifted her.

He ran his hand down her arm, feeling for a break, a dislocated joint. The arm was all right, but there was a swelling at her wrist indicating a possible sprain or fracture. Since there was nothing more serious apparent, he climbed into the seat and buckled himself in. He could take care of Louella's medical problems later, after he found out what *Thorn's* situation was. The boat always came first!

A quick glance at the instruments showed that there was no pressure differential on the sails. The wind speed indicator read a fat zero, which meant that *Thorn* must be moving at the same speed as the wind. He noted that the ballast was zip. In an obvious contradiction, the pressure gauge showed them to still be on the boundary layer. Nevertheless *Thorn* was bobbing uncomfortably, as if she had lost some trim.

He clicked on the pumps that would bring more ballast up through the pipes. Once the boat had the proper trim he could turn her back into the wind. As he was waiting for that, he looked at the inertial. According to the readout they had lost most of their progress for the last day, at least. They were being blown back toward CS-15, but on a southward angle.

Since it would be a while until the pumps did their work he got the first-aid kit out of storage and put a splint on Louella's arm. He prepared a dose of painkiller for when she awoke. He'd only give it if she asked for it. Carefully he turned her head and waved a broken ampule under her nose.

"Wha . . . where . . . humph," she said and tried to sit up. "Wha what happened?" she asked.

"Don't know. Was coming back down the tube when all hell broke loose. Threw me against the side and knocked me out. We're way off course now."

"Oh, your head," she said and reached out with her good hand to touch his forehead. "You're bleeding!"

He brushed her hand away. "Just a bump, I think—rotten headache, though. How do you feel? Do you need this?" he held up the dose he'd prepared.

"Can't take something that will knock me out. Help me get to the bunk so I can lay down. We need to figure out what we have to do. Maybe then I'll let you use it."

By the time he'd wrestled her into the bunk and fastened the straps to secure her in place, the pumps had been running for a good ten minutes.

He dropped into the seat and checked the gauges. The stabbing pains in his side abated for a moment.

"That's strange," he remarked as he flicked the pump switches on and off. "There doesn't seem to be any ballast."

"Yeah," Louella said. "You left the heaters on. I flipped them off while you were messing with the sail."

"Shit, I forgot about them when the sail blew. But that doesn't explain why the pumps aren't working."

"Maybe we're floating too high. Maybe the keel isn't deep enough to find anything to pump."

"Can't be. Pressure gauge says we're right where we're supposed to be." He glanced at the keelmeter.

"The keel's down as far as it will go, so we should be pumping ballast. Since we aren't that means that either the pumps have stopped working or something has damaged the lines leading to the ballast tanks."

"Either way we can't trim the boat," Louella mused. "Well, let's try using the sails anyway to see what sort of maneuverability we have. We have to be able to make one of the stations or we're royally screwed."

Pascal threw the switches to pull the foresail back from its fully extended position. As the winches brought the sail tight, *Thorn* heeled to lee instead of turning into the wind. He let the sail out, hoping to run downwind instead. Perhaps on that setting he'd be able to steer from side to side. But the boat wouldn't turn that way either.

"Unless you can think of any other things to try," he said after an hour of experimenting with various settings of sails and the immobile keel, "I think we're stuck. There aren't any rescue boats out here. It looks like you'll get your wish to 'sail Jupiter's seas forever.' According to my calculations, *Thorn* won't intersect a station's track for at least a thousand years."

"Well, Pascal," Louella said in a surprisingly soft voice, "If we're going to die, I can't think of anybody I'd rather do it with than you, and no better place than on a racing boat."

"I'm afraid that I can," he replied too quickly and watched the gray nothingness of the infrared display as he contemplated his own death.

At least he'd be free of this damn headache, he thought.

Rams was puzzled as he approached the strangely warm object that had suddenly appeared. *Primrose* was now matched to the speed of the object. He carefully headed downwind and slowly closed the gap between them. Rams kept one hand on the winch controls as he maneuvered the ship closer and closer to the object, tightening and loosening the sail controls to creep forward.

At a few hundred meters the infrared image resolved into a strange double blob. The large upper blob was one or two hundred meters above *Primrose*. The smaller one was about the same distance below. A barely discernible thin line, apparently just a few degrees above the ambient temperature, connected the two blobs. He'd never seen anything so strange in all of the time he'd spent on Jupiter's seas.

As he drew closer, the upper blob resolved itself into the familiar heat signature of a small craft, possibly a cargo barque or maybe a miner. Maybe the connecting line was its keel, he thought. But what was the blob at the bottom? It was far too large and irregular to be keel weights.

He pumped a little more ballast into *Primrose's* tanks and sank lower. He wasn't going to get any closer to the pair until he figured out what was going on. "Hate to mess up some science folks, wouldn't we?" he

remarked to *Primrose*.

The heat image resolved into two keel ribbons. They appeared to be tangled around some large shape that was below ambient temperature, as if it had come from deeper in the atmosphere. He flooded it with his sonar, watching as the display built up a ghostly image of the irregular shape.

On a hunch he pinged it with the docking sonar frequency and listened through the static for the reply: One, two, three pings came back, which indicated that he had made the lump ring. Either it was hollow, which made no sense, or it had a high metallic content. Somehow the other ship had been hit by a piece of rock brought up by the storm—a huge piece that could be worth a fortune.

He brought the ship back up until it was level with the other ship, carefully staying downwind to avoid smashing into her. With fine adjustments of the jib he allowed the other ship to come closer and closer until they almost kissed.

"Hello," he yelled over the radio link, hoping that they were close enough to overcome the static. "This is the clipper *Primrose*, four days out of CS-15. Do you need assistance?"

Louella started at the sudden and unexpected sound of a strange human voice coming over the static of the radio. Pascal tried to sit upright and looked around. Since the accident he had slept in the helmsman's seat, letting Louella have the more comfortable bunk where she could sleep. She'd relented after the second day and let him administer the painkiller. "Just make sure it isn't a lethal dose," she'd jokingly remarked. "I don't want to miss the end of this race."

"Nor I," Pascal had replied slowly, and thought about what she had just said. He'd never considered that possibility. An "accidental" mistake in dosage would certainly be something to think about as the air grew closer.

To pass the time they'd talked about things that they never seemed to have time to discuss earlier. Except for the long trip out from Earth, when she was still pissed after their big argument and wouldn't talk to him, the only time they'd had together was during the races, or while preparing for them. Under those circumstances it had been all business; winning the race, discussing the set of the sails, the movement of the currents and the wind, talking about the positions and strategies of their competition, and the endless details of reconciling her art of sailing with his science. After every race they went their separate ways, until the next race, the next challenge that threw them together.

"Always wanted to have a place on Chesapeake Bay," Louella confided during one of the times they were both awake. Since the accident they had abandoned their five hours on, five hours off schedule. "Some little marina where I could teach kids to race. Maybe have a dinghy school of my own. You know, take a shot at producing a batch of Olympic champions."

Pascal snorted at that: if he ever got out of this he wanted to live as far from the ocean as possible, maybe in Arizona or New Mexico. Someplace where wet clothing, must and mildew, and cold, sodden food were unheard of. Someplace where the damned footing was solid and the horizon always stayed level with your eyes. He yearned for some place that was dry, flat, and had no dangerous cliffs.

But neither could convince the other of the desirability of their dreams, even though the chances of achieving them were impossible. There was only a day or two left of the life support system. The water had gone the day before. Both knew that they were doomed. They would become a Jovian version of the Flying Dutchman.

"I repeat, do ... **crackle** . . . hisssss ... need assistance?" the voice rattled from the speaker. Pascal fumbled around under the instrument panel and found the microphone.

"I hear you loud and clear," he yelled. "Thank God you found us. I mean, yes, yes we need help badly!"

"Are . . . **crackle** pop** . . . under sail?" the voice said with what sounded like a tone of impatience.

"No," Pascal said in response. "We cannot maneuver. We are without ballast and cannot control our craft."

"**Pop. . . ** ... wish to . . ." came the hissing reply. "Do you . . . **** .. rescued?"

"Of course we do, you fucking idiot!" Louella screamed into the microphone. "Of course we want to be rescued!" Tears of happiness were steaming down her face even as she cursed the stupidity of the question.

"Tell him to give us instructions," Pascal said, wiping the moisture from his own face with one hand while he gently wiped at the tears on Louella's with the other as they hugged in the cramped cockpit.

Rams tried to understand what the woman was saying about the condition of their boat. The radio handled low frequencies better than high, and that made her voice difficult to understand. If only she'd stop and let the other guy talk!

**** . Can't maneuver . . . ," she told him. "No food, no water, . . . life support gone. We're afraid ... **crackle** . . . ship . . . complete loss .. abandon .. "pop"...

Rams wondered what sort of idiots they were to talk about abandoning their ship. Didn't they know the wealth that they'd discovered? Didn't they realize how valuable their own ship was? "I'll take her under tow if you want."

"Understand. *** ... need medical ...**tention."

"All right. I will bring you aboard and secure your ship. By the way," he said slyly, "will you give me salvage rights if I do so?"

It took him several repeats before he could make them understand just what he was asking. He made sure that he had their request to abandon ship on file. It had to be clear that it was their idea, not a threat by him. He really had no choice but to help them—that was how you survived on Jupiter.

Rams struggled into the heavy pressure suit and, once inside, hooked its safety line to the ring near the hatch. Attached to his belt were lengths of high tensile strength line. He could use them to string the two craft together. Checking to make certain that everything was ready, he opened the hatch and stepped directly out into the howling winds of Jupiter.

Rams had brought the far larger *Primrose* to within fifty meters of the smaller ship's hull, letting the venturi effect of the winds in the narrow channel hold them close.

His exterior lights just barely illuminated the upper surface of the other ship. Rams watched as two figures struggled awkwardly out of the hatch and clamped their lines onto the deck rings.

The two ships bucked and lurched, the gap between them widening and closing. The decks rose and

sank relative to each other as they bobbed, side by side. Rams prayed that he'd set the ship's sails properly to hold station with the drifting ship. He clicked his suit light four times to attract their attention.

When he got a wave of acknowledgement, he readied one of the lines, whirling the pulley at its end over his head in ever widening circles before releasing it upwind. The pulley sailed out and too quickly down, drawn by the higher acceleration of Jupiter's gravity. It clanked onto the near side of *Thorn's* hull and slipped away.

Rams retrieved the line and tried again, and a third time. On the fourth toss, the pulley finally cleared the deck. The line whipped around to catch against the two figures, making the smaller of them stagger back from the impact.

The other figure secured the pulley to their deck with one arm and waited. Rams carefully pulled the light line back as he paid out a heavier one that was tied to its end. It took nearly half an hour before he had a slack double line rigged between the two rocking and bobbing craft. The line moved up and down, tightening and then loosening as the two ships lurched in the wind. He wrapped the line around a deck winch and locked it in place.

Finally, Rams attached a cradle of ropes and clamps he had rigged to a hook on the heavier line. Slowly he winched the cradle to the other ship, hoping that they would use it properly. The last thing he wanted was for someone to take a plunge.

"You first," Pascal said nervously as he caught hold of the rig. "Let me hook you up."

"No fucking way. I'm the captain of this boat and I leave last," Louella replied. "Turn around so I can hook the clamps to your suit."

"Yeah, and how are you going to hook yourself up with a broken arm?" he shot back. "Now turn around. For once, don't be such a bitch!"

"Why, Pascal," she said in surprise. "That sounds like you actually care about me."

"Well, it looks like we'll have the *Whitbread* next year after all," he said as he checked the rig's fastenings a second time to make certain they were secure. "I wouldn't want to be with anyone else in that race."

"It's a date, lover," said Louella.

Once he saw that Louella had been dipped, jerked, and lurched to the other ship, Pascal had to face what would happen next. In a few moments the rig would return and he would have to hook himself to it so that his rescuer could winch him across the bottomless chasm of Jupiter's atmosphere. Instead of a nice solid deck beneath his feet there would be nothing but black nothingness that went down forever, down into the cold heart of this cruel planet

:He'd be suspended by only a few thin filaments of braided cord and his trust in the skill of some unknown captain. For long minutes he would be swinging above the great void, helpless as the strong fingers of Jupiter drew him down, down, down.

He doubted that he really had the nerve. Could he really trust himself to that hopelessly thin cable? And even if he did, where would he then find the courage to step out, off the solid deck, and place himself at risk?

The moment of decision had come. The rig was swinging out of the bright lights of the other ship and coming toward him. His stomach hurt. He was either going to die on this crippled ship or drop to a certain death. He felt like crying, he was so afraid.

"What are you doing out here anyway?" Rams asked as he unhooked the woman from the rig, confident that the suit radios would work at this close range. "You sure don't look like miners."

"We're one of the teams in the Great Race," Louella replied.

"A race? On Jupiter? What sort of foolishness is that?"

"Don't tell me that you haven't heard about the Race. Hell, it's been on every newscast for the last year. Crap, we're probably the biggest celebrities on the whole planet."

"Don't have much time for news," Rams replied. "Radio don't work down here. Have to depend on the media they send down the elevator to keep up with events. Besides, if it doesn't have to do with cargo or weather I don't pay much attention to it."

"We're in a race with some other barkentines—it's the first Jupiter sailboat race," Louella explained. "JBI sponsored and financed our boat."

Rams cursed softly to himself, and then said aloud, "Must be nice to be able to waste money like that. I can think of guys who could use that boat for something worthwhile; something better than some fancy trophy!" he added vehemently.

"Well, I'm certain that JBI will be grateful. They'll probably reward you for rescuing us."

"Well, that might be nice, but I'm going to get more than a little reward out of JBI, you can depend on that. Salvage alone ought to pay off the debt on *Primrose*—that's my ship," he added pointing at the deck with one glove. "The other thing might pay for something more."

"What other thing?" Louella asked, but Rams ignored her.

"What's going on with your partner?" he wondered. "What the devil is he waiting for? Why isn't he hooking himself up to the rig?"

"I was afraid this would happen," Louella answered. "Pascal's afraid of heights. Probably shitting in his suit right now, just thinking about the drop in front of him." Louella waved her good arm vigorously over her head. "Come on Pascal, you asshole; hook up and get the hell over here!" she shouted, forgetting that the object of her scorn couldn't possibly hear her.

After long minutes of waiting with no sign of action by the small figure on the deck of *Thorn*, Rams swore. "Do you think that you can operate that winch with one hand? Looks like I need to go over there and kick your buddy in the ass."

When Louella signaled the affirmative, Rams connected a pair of heavy lines to his belt. One of them was tied to the stern docking ring. He activated the winch to bring the rig back.

He grabbed the rig as it swung back, hooked it to the rings of his suit, and signaled Louella to start the winch. "Keep those lines from tangling," he warned her as he stepped off the deck and began to swing across the gap.

As soon as Rams's boots hit *Thorn's* deck, he secured his safety line. He detached the rig and quickly clamped it to Pascal's suit, brushing aside the other man's arms when Pascal fought him. He secured the last clamp, unclipped Pascal's safety line, and waved his arm for Louella to start the winch.

Pascal protested, stiff-legged, against the pull of the winch. The resistance was putting an extra load on the line, so Rams stiff-armed him in the middle of the back, forcing him forward. At that moment the two ships spread apart and pulled the line taut. With a scream, Pascal was yanked from the deck to hang above the inky blackness. As the ships bobbed and danced in the winds, he jerked on the line like a spastic marionette.

Rams headed aft to secure one of the heavy lines to the stern docking ring. The other end was tied to the docking winch on *Primrose* and could be used to pull *Thorn*.

After tying the line Rams dropped through the hatch and recovered *Thorn's* log. The owners would probably want it if they couldn't get the ship back. He stowed the log in his hip pouch and emerged on deck just in time to catch the returning rig. He grabbed it and lashed it to the deck. It would stay until he was finished securing the other line to the bow.

Thorn lurched, dropping far below *Primrose*. She rocked violently from side to side, her motion the result of the enormous mass embedded in her keel. If that thin ribbon broke from the strain, it would release the weight, and *Thorn* would shoot up like a released cork, endangering both ships.

Quickly paying the safety line behind him, Rams struggled to the bow.

Bracing himself against further moves of the deck, he clamped the second line to the ring. This way, after he connected the other end of this lead line to *Primrose's* forward winch, he could adjust the two ships so they rode side by side.

Satisfied with his work, he took the free end and began his way back to the rig. When he managed a quick glance at *Primrose*, he noticed that her sails were shifting, which indicated that she might be drifting, changing her heading. He had to get back and trim her sails before she got out of control. He started walking faster.

He was halfway back when a sudden gust shot the two ships apart. The tow line he'd tied at the stern straightened and vibrated like a violin string. The safety line parted with a snap that whipped the rig out and back. In seconds it was flailing downwind, lashing the hide of *Thorn* like the whip of a deranged jockey.

Rams straightened as the *Thorn's* bow swung away and the ship came stern-wise to *Primrose*, where it jolted it to a stop. He stumbled backwards, trying to regain his balance, just as the wishbone switched sides and slammed to the end of the extended traveler.

And against Rams's right leg.

The intense pain in his leg was the first thing Rams felt when he recovered consciousness. Then he tried to make sense of the upside down view of the swaying side of the ship. He realized that he was hanging head down from his safety line, his left leg bent under him. First, he felt cold, and then hot as the pain from his leg shot through him. Waves of increasingly severe pain washed up from his leg until he could think of nothing else.

During a brief respite from the pain, he tried to move. Something was holding his arm immobile. He tried to reach across with the other arm, desperately seeking the safety line that lay somewhere out of sight. After a few fumbling tries he gave up. Hell, even if he could find it, he wouldn't be able to climb back to

the deck, not in his condition.

He calmly assessed his situation before the pain returned. He obviously couldn't do anything for himself, and the only other help was a woman with a broken arm and a little fart who was too afraid to do anything. Neither one would be able to help him. He was going to die.

Without warning he lost his dinner, fouling the inside of his helmet and filling his nose with sour, burning fluid.

Then he passed out.

Pascal picked himself off of the deck and looked toward *Thorn*. She was gone! In a panic he looked to the other side, saw nothing, and then looked to the stern.

Very faintly he could see the dim reflection of the ship's lights off *Thorn's* pointed stern. Glinting in the lights was the thin line that held the two together; it must be the line the captain had rigged before the wind hit them.

"Do you see him?" Louella's voice crackled in his ears. "I lost sight of him when the gust hit us."

"Was he blown away? I don't see the safety line he rigged."

"It broke when we separated. Do you think he fell?" Louella screamed.

A wave of nausea washed through Pascal; his worst nightmare: to fall endlessly into the heavy empty blackness beneath them. That could have been him if the line had separated when he was coming across. Thank God he was safely tied to this deck when it happened, he thought.

Louella was pulling on his arm, pointing toward the hatch. He followed quickly, eager for the added security of the ship.

"I've got to bring the two ships alongside, so we can bring him back," were the first words he heard when he undid his helmet in the small air lock. "We've got to get the ships positioned like they were."

Pascal nodded his head in agreement. If they could turn this huge ship so that *Thorn* was once again flying alongside, they could toss another line across and pull the captain back to safety. He bit his lip; it would be hard, going out on deck again, but he felt that he could do it.

"I'll ready a new line," he said, and screwed his helmet and his courage into place.

Louella couldn't possibly toss the line across with only one good arm. On the other hand, he had no doubt of her ability to handle this, or any other ship, even with one arm in a sling.

None whatsoever.

Through the most disconcerting lurches and jumps, Louella managed to bring *Thorn* back alongside. *Primrose* was actually sailing backwards, the wind on the reverse of her sails. This allowed her to drag *Thorn* by the single tow line back into the range of *Primrose's* bright lights.

Pascal was dismayed when he saw the dangling figure of their rescuer. He waved furiously, hoping the captain would wave back. But his attempt was in vain—the far figure dangled lifelessly, swinging from

side to side with every motion of the boat.

Pascal pondered his situation. How was he to get a safety line across if the other man couldn't secure it? He didn't know whether the captain was dead or alive, awake or unconscious. But he couldn't just leave him there, alone in the dark, waiting to fall should that single, thin thread holding him in place break. What could he do?

He looked at the flapping remains of the former safety line whipping back and forth against the side of the boat, somehow hoping to find it restored.

Louella certainly wouldn't be able to help, not with her arm out of commission. He stood there for long minutes as he considered his options. First, Rams might recover and climb back up to where he could catch a line. That would allow him to winch the captain back.

If that didn't happen then he could, he could . . . what? Leap across the space between the ships, pick Rams up in his arms and leap back? Pascal watched the motions of the two ships carefully as they rose and fell, closed and separated, shifted forward and back, the one with a little sideways motion and the other rolling precariously. Jumping would be impossible, not only because of the unpredictable movement of the ships but for the distance as well. He'd barely clear the edge of the deck before plunging down. . . . He let the thought stop there as he tightened his sphincters. He discarded that option quickly.

Maybe, he hoped, he could catch the line on something over there and pull Rams back. Four futile tries showed him the stupidity of that idea. Which left only one option—going over to the other ship and bringing the slumped figure to safety. But how? He certainly couldn't get near the edge and risk that long, long fall beneath them.

He went back to the hatch, where he plugged into the intercom and explained the situation to Louella. Surely she would understand, he thought.

"You're wasting time thinking about it, damn it! Get your ass over there and get him back!" Louella screamed. "I don't give a rat's ass how you feel; if you don't get started in ten minutes I'll make sure that it gets done myself."

The thought of Louella with her arm in a cast trying to rescue Rams was so ludicrous that Pascal began to laugh. "You couldn't even get your suit on by yourself," he wheezed.

"Exactly, but one hand is all I need to lock the damn hatch so you can't get back in without him."

Pascal was horrified, doubting her at first, and then realizing that she was entirely capable of carrying out her threat. "You wouldn't," he said.

"Just try me," she shot back.

Pascal climbed back on deck and winched the stern tow line as close as was safe. He thought that he could slide down the line, but then realized that he couldn't chance it—one slip and he'd drop into the ten or fifteen meter gap between the ships and plunge into the forever, below. What if he froze halfway across? He'd probably hang there until he gave in to vertigo and then he'd fall, fall, fall into the black maw that thirsted, that called out to him. He shook his head and stepped back farther from the edge of the deck. How could he overcome this fear that left him incapable of action? There had to be some other way, some way to rescue Rams without having to risk a fall. There had to be!

He returned to the hatch and pleaded with Louella to think of something, some way that did not involve making him cross the deep chasm of his innermost fear. They reached the same conclusion as before; that

he was the sole resource they had to save Rams.

"In case you think I was kidding, I've already locked the hatch," she muttered before cutting off the conversation.

Pascal debated testing the hatch to see if she had really carried out her threat, but decided against it. He really didn't care to find out.

He returned topside and worked his way carefully to the stern. He stood there and contemplated what he had to do; what he could not escape doing, no matter what his fear.

Louella had been doing a good job of keeping station. *Thorn* was still drifting off to the port side, slightly below *Primrose's* level. Their positions gave the tow line a downward slope.

All that he had to do was tie himself to the line and slide down to *Thorn's* deck. It sounded so easy, so terribly easy. But what if the line parted? No, he couldn't afford to think about that.

Pascal retreated to the winch at midships, tore the remnants of the safety line away and wrapped a new line, fastening the other end to his suit. *That* would give him some added security, and could be used to drag Rams back aboard.

He fashioned a short loop around the tow rope with a short length of line, and tied both ends to his suit. After a moment's hesitation, he attached a second loop—and a third. Just for safety's sake, he detached the line that held him to the deck and put that around the tow as well. Finally certain that he was quadruple redundantly safe, he lay under the tow and grasped the line with both hands.

Through the narrow visor of his helmet he could only see the tow rope and the spider's web of lines he had attached. He concentrated on the line and his gloves around it, trying to suppress any thoughts of what he was about to do. He tried to drive away all thoughts of the depths below him, drawing him so deathly down, down, down. .

Pascal shook himself. If he hesitated for one more second, thinking about it, he would be unable to move. Ignoring a shudder of stomach-wrenching fear that tore at his insides, he tugged at the tow with one hand, said a short prayer, and began to slide.

There was a snap, a millisecond of a fall, as the slack in his safety lines was taken up by his weight. The tow vibrated for a second more and then Pascal was falling, sliding, hitting the deck of *Thorn* with a bone-jarring impact. He clutched the tow tightly through his gloves as he tested the solid reality of the deck beneath his feet. He had made it, he had not fallen. He had conquered the depths of his fear. Nothing was beyond him now. Nothing!

The smell inside his suit told him that his body had not shared his courage.

Squirming around to pull himself upright, securing a new safety line to the rolling deck, untangling the many lines that held him to the tow line, and making his way forward to stand on the deck above Rams took only a few minutes. The captain was still hanging, just a few meters down the side. Pascal could see that he had the safety line wrapped around one arm, pinning it to his side.

"Captain?" he called when he thought he was within range of the other's radio. "Can you hear me?" Only silence answered him. He could expect no help from Rams.

But how was he to get Rams's unconscious body up on deck? It would be impossible to pull the man the short distance up the side with the safety line. At best, he couldn't lift his own weight under two g's. What chance did he have of pulling a larger man, and one enclosed in a heavy pressure suit, that far? It would

be the equivalent of lifting 350 kilos on Earth! Even professional weightlifters had trouble with that kind of load. No, he couldn't do that.

Neither did he think he could maneuver the tangled safety line sideways to the winch and use that to pull him up. A lateral pull would be the same as lifting Rams a half a meter or more, out of the question.

There was no choice; he'd have to climb down and attach the safety line he'd brought with him. Easy to say—sure, just drop down and hang over the depths once again. Nothing to it, he told himself. After all, hadn't he come across the gap?

No, you can't, his mind replied as the edges of his innermost fear crept back in. He tried not to listen to it as he rigged two lines to the deck; one to support him and one more for additional security. His empty stomach clenched in a knot of sour fear the whole time. He fervently wished that he didn't have to do this, that there was some other way. Tears stung his eyes. The fear of falling was too great to bear. Why did it have to be him?

The line he'd tied to the *Primrose's* winch was attached to his belt, ready to clamp onto Rams's suit. Not incidentally, it provided another layer of security for himself.

Screwing up all of the resolve he could muster, he turned his back on *Primrose* and forced himself to take one small step backwards, out and down, paying a few centimeters of line out behind him. He froze. He could move no farther no matter how hard he forced his legs to move. His fear had taken control. He couldn't put himself in danger.

Thorn suddenly started to roll to starboard and Pascal watched the level deck in front of him start to tilt away. He rapidly stepped backwards, trying to stay on the top of the rolling ship, letting out line as fast as he could.

Then, as *Thorn* heeled to a sixty degree list, Pascal found himself beside Rams. There was a solid deck directly beneath his feet. "Piece of cake," he remarked and knelt to attach the safety line to Rams.

First, though, he had to disconnect the tangled line. The tension between that and the safety line to *Primrose* would break the captain's arm if he didn't. He freed the line and let the wind take it.

He disconnected the safety line from his suit to clip it to Rams's when *Thorn* began to roll the other way. Rams's body started to slide down the hull. Pascal extended the safety clamp but was stopped short by the limits of the other line. The ship continued to roll. The captain was sliding. In seconds he would plunge into the dark and fall.

Pascal fumbled to release his own line, trying to balance on the moving hull. His fingers didn't want to operate the clamp. He felt himself starting to slide on the steepening slope. With a final, desperate twist of his hand, Pascal released the restricting line, lunged forward, and clipped the clamp onto Rams's suit.

Both of them began to slide, faster and faster, down the increasingly steep side of the ship. In a panic Pascal threw both arms and one leg around Rams's body, clinging to him in desperation, as the hull beneath him changed to a vertical wall.

Pascal screamed in pure terror as he felt them fall from the ship and down into the dark. He knew that the thin line he had put on Rams wouldn't hold the weight of both of them. He screamed louder as their downward fall stopped and they swung to the top of their arc and began to fall the other way.

"I am going to die. I am going to die," he repeated in an unending string of fear-crazed babble. He could feel Jupiter pulling at him, trying to pry his hands apart so he would fall, fall, fall. It was very dark and the

manic strength of his arms were all that stood between him and certain death. He clenched his eyes tight and prayed as he had never prayed before.

There are moments in a man's life when he faces the core of his being; a single defining moment when his true nature is revealed to him and all pretense, all bluff and bluster, are stripped away. This was Pascal's moment. He knew that he would never be able to conquer the fear that rested in his innermost being. He knew that he was, at heart, a coward

Something clanged on the back of Pascal's suit as they slammed against something, hard! He felt them start to swing out, and then "CLANG!"—he hit again. He opened his eyes and saw a vast gray wall receding from him. In seconds, they reached the end of their arc and the wall advanced to smash against him once more. He threw his legs out to brace and absorbed the worst of the impact. Rams nearly twisted from his grasp as they hit.

It took him a second to realize that the "wall" was actually the side of *Primrose*. It took him another second to realize that it was moving steadily downward beneath his feet.

He risked a glance up and saw the taut line disappear around the curve of the ship. They were definitely being pulled up the side. He set his feet against the ship's side and walked up the wall, clutching tightly to Rams and frightfully aware of the depths behind him, beneath him.

As soon he came over the edge of the deck he saw Louella standing by the winch. Finally, he was to the point where he could walk more or less upright. From Louella's perspective it must look as if he were holding the unconscious form of Rams in his arms. He hoped that she wouldn't realize that he was hanging on to the man for dear life. He hoped that she had not heard him screaming in the dark.

"Secure the ship," Louella yelled as soon as the winch stopped. With shaking hands Pascal quickly clipped himself to a safety line. That done, he struggled forward to secure the heavy line to the forward docking winch. The slow progress forward and back gave him time to compose himself. Time for the acceptance of his true nature to sink in.

"Don't worry. Everything's under control," were the first words that Rams heard when he finally recovered consciousness. The pain in his leg had stopped, as had all other sensation below his waist. "We've got both ships secured and we're out of the storm."

"My legs. . . ." he began and then stopped. A woman stood over him like a welcoming angel. One of her arms was in a sling.

"Gave you a nice little spinal to hold off the pain from your broken leg," the woman said with a chuckle. "But don't worry, you'll be functioning below the waist in a few days. At least I hope so."

"I don't understand. All I remember is getting hit from behind and. . . ."

The woman smiled. It was a nice smile, he thought. "Pascal went after you and dragged your ass back here." She grinned, "I think he'll stop shaking by the time we make station."

"But how, where, what. . . ?" Rams mumbled in confusion, feeling himself start to slip back into unconsciousness. "I thought that he was too afraid."

Louella shrugged. "I guess the sea's got a way of getting the most extraordinary things out of you."

"The sea. . . ?"

"Rest now. You've got JBI's most expensive and experienced captain and navigator looking after you. I would think we have a reasonable chance of finding a station with that combination."

". . Station," Rams thought as he succumbed to the call of the drugs. She'd said both ships were secure. He thought of the riches that awaited him.

The storms really did provide the most amazing things.