

HE FELL INTO A DARK HOLE

Jerry Pournelle

This story is the reason I am editor of this book. Some years ago my friend and partner Larry Niven published a story called "Neutron Star" which made use of what was then a new concept, neutron stars. He won a Hugo with the story, and also introduced the idea into science fiction.

I couldn't be absolutely first with Black Holes. There had been a few stories about Holes already published although I hadn't seen them. (Writers have very little time to read fiction.) Still, I would be among the first, and with any luck I'd be able to do for Black Holes what Larry Niven had done for neutron stars.

*I set the story in my world of the CoDominium, which takes us from a few years hence into the far future. A number of my other stories—the best known being *THE MERCENARY* and *THE MOTE IN GOD'S EYE* (with Larry Niven)—make use of this "future history". The series assumes that the United States and the Soviet Union end the cold war by joining in an uneasy alliance, Their respective governments find it far better that there be only two Great Powers, even as rivals, than for there to be a number of independent power centers. As a part of this alliance structure they create the CoDominium Space Navy. They also try to control all scientific research, since new developments might threaten the CoDominium's supremacy.*

As a result there is little basic or theoretical research, and nearly everyone has forgotten about Black Holes, until ...

CDSN Captain Bartholomew Ramsey watched his men check out, each man leaving the oval entry port under the satanic gaze of the master-at-arms. After nearly two years in space the men deserved something more exciting than twenty hours dirtside at Ceres Base, but

they were eager for even that much. CDSS *Daniel Webster* got all the long patrols and dirty outsystem jobs in the Navy because her captain didn't protest. Now, when these men got to Luna Base and Navy Town, Lord help the local girls...

Well, they'd be all right here, Ramsey thought. The really expensive pleasures were reserved for Belt prospectors and the crews of Westinghouse mining ships. Bart glanced at the screens displaying ships docked at Ceres. None of the big ore-processing ships were in Thorstown. Things should be pretty quiet. Nothing Base Marines couldn't handle, even if *Daniel Webster's* crew hadn't been on a good drunk for twenty months. Ramsey turned away from the entry port to go back to his cabin.

It was difficult to walk in the low gravity of Ceres. Very inconvenient place, he thought. But of course low gravity was a main reason for putting a Navy yard there. That and the asteroid mines...

He walked carefully through gray steel bulkheads to the central corridor. Just outside the bridge entrance he met Dave Trevor, the first lieutenant.

"Not going ashore?" Ramsey asked.

"No, sir." Trevor's boyish grin was infectious. Ramsey had once described it as the best crew morale booster in the Navy. And at age twenty-four Dave Trevor had been in space eleven years, as ship's boy, midshipman, and officer. He would know every pub in the Solar System and a lot outside... "Never cared much for the girls on Ceres," he said. "Too businesslike."

Captain Ramsey nodded sagely. With Trevor's looks he wouldn't have to shell out money for an evening's fun anywhere near civilization. Ceres was another matter. "I'd appreciate it if you'd make a call on the provost's office, Mr. Trevor. We might need a friend there by morning."

The lieutenant grinned again. "Aye, aye, Captain."

Bart nodded and climbed down the ladder to his cabin. Trevor's merry whistling followed him until he closed the door. Once Ramsey was inside he punched a four-digit code on the intercom console.

"Surgeon's office, Surgeon's Mate Hartley, sir."

"Captain here. Make sure we have access to a good dental repair unit in the morning, Hartley. Even if we have to use Base facilities."

"Aye, aye, sir."

Ramsey switched the unit off and permitted himself a thin smile. The regeneration stimulators aboard *Daniel Webster* worked but there was something wrong with the coding information in the dental unit. It produced buck teeth, not enormous but quite noticeable, and when his men were out drinking and some dirtpounder made a few funny remarks...

The smile faded as Ramsey sat carefully in the regulation chair. He glanced around the sterile cabin. There were none of the comforts other captains provided themselves. Screens, charts, built-in cabinets and tables, his desk, everything needed to run his ship, but no photographs and solidos, no paintings and rugs. Just Ramsey and his ship, his wife with the masculine name. He took a glass of whiskey from the arm of the chair. It was Scotch and the taste of burnt malt was very strong. Bart tossed it off and replaced it to be refilled. The intercom buzzed. "Captain here."

"Bridge, sir. Call from Base Commandant Torrin."

"Put him on."

"Aye, aye, sir." The watch midshipman's face vanished and Rap Torrin's broad features filled the screen. The rear admiral looked at the bare cabin, grimaced, then smiled at Ramsey.

"I'm going to pull rank on you, Bart," Torrin said. "Expect that courtesy call in an hour. You can plan on having dinner with me, too."

Ramsey forced a smile. "Very good, sir. My pleasure. In an hour, then."

"Right." The screen went blank and Ramsey cursed. He drank the second whiskey and cursed again, this time at himself.

What's wrong with you? he thought. *Rap Torrin is as good a friend as you have in the Navy. Shipmate way back in Ajax under Sergei Lermontov. Now Rap has a star, well, that was expected. And Lermontov is Vice Admiral Commanding, the number two man in the whole CoDominium Space Navy.*

And so what? I could have had stars. As many as I wanted. I'm that good, or I was. And with Martin Grant's influence in the Grand Senate and Martin's brother John in charge of United States security, Senator Martin Grant's son-in-law could have had any post no matter how good...

Ramsey took another whiskey from the chair and looked at it for a long time. He'd once had his star, polished and waiting, nothing but formalities to go, while Rap and Sergei grinned at his good luck. Sergei Lermontov had just made junior vice admiral then. Five years ago.

Five years. Five years ago Barbara Jean Ramsey and their son Harold were due back from Meiji. Superstiously, Bart had waited for them before accepting his promotion. When he took it he'd have to leave *Daniel Webster* for something dirtside and wait until a spacing admiral was needed. That wouldn't have been long. The Danube situation was heating up back then. Ramsey could have commanded the first punitive expedition, but it had gone out under an admiral who botched the job. Barbara Jean had never come home from Meiji.

Her ship had taken a new direct route along an Alderson path just discovered. It never came out into normal space. A scoutcraft was sent to search for the liner, and Senator Grant had enough influence to send a frigate after that. Both vanished, and there weren't any more ships to send. Bartholomew Ramsey stayed a captain. He couldn't leave his ship because he couldn't face the empty house in Luna Base compound.

He sighed, then laughed cynically at himself. Time to get dressed. Rap wanted to show off his star, and it would be cruel to keep him waiting.

The reunion was neither more nor less than he'd expected, but Admiral Torrin cut short the time in his office. "Got to get you home, Bart. Surprise for you there. Come along, man, come along."

Bart followed woodenly. *Something really wrong with me*, he thought. *Man doesn't go on like this for five years. I'm all right aboard Old Danny Boy. It's only when I leave my ship, now why should that be?* But a man can marry a ship, even a slim steel whiskey bottle four hundred meters long and sixty across; he wouldn't be the first captain married to a cruiser.

Most of Ceres Base was underground, and Bart was lost in the endless rock corridors. Finally they reached a guarded area. They returned the

Marines' salutes and went through to broader hallways lined with carpets. There were battle paintings on the walls. Some reached back to wet navy days and every CD base, insystem or out, had them. There were scenes from all the great navies of the world. Russian, Soviet, U.S., British, Japanese... there weren't any of Togo at Tshushima, though. Or Pearl Harbor. Or Bengal Bay.

Rap kept up his hearty chatter until they got inside his apartment. The admiral's quarters were what Bart had visualized before he entered, richly furnished, filled with the gifts and mementos that a successful independent command captain could collect on a dozen worlds after more than twenty years in service. Shells and stuffed exotic fauna, a cabinet made of the delicately veined snakewood of Tanith, a table of priceless Spartan roseteak. There was a house on Luna Base that had been furnished like this...

Bart caught sight of the man who entered the room and snapped to attention in surprise. Automatically he saluted.

Vice Admiral Lermontov returned the salute. The admiral was a tall, slim man who wore rimless spectacles which made his gray eyes look large and round as they bored through his subordinates. Men who served under Lermontov either loved him or hated him. Now his thin features distorted in genuine pleasure. "Bartholomew, I am sorry to surprise you like this."

Lermontov inspected Ramsey critically. The smile faded slightly. "You have not taken proper care of yourself, my friend. Not enough exercise."

"I can still beat you. Arm wrestling, anything you name—uh, sir."

Lermontov's smile broadened again. "That is better. But you need not call me '*sir*'. You would say '*sir*' only to Vice Admiral Lermontov, and it is quite obvious that the Vice Admiral Commanding cannot possibly be on Ceres. So, since you have not seen me..."

"I see," Ramsey said.

Lermontov nodded. "It is rather important. You will know why in a few moments. Rap, can you bring us something to drink?"

Torrin nodded and fussed with drinks from the snakewood cabinet. The ringing tone of a crystal glass was very loud in the quiet apartment.

Ramsey was vaguely amused as he took a seat at the roseteak table in the center of the lush room. A rear admiral waiting on a captain, and no enlisted spacers to serve the Vice Admiral Commanding, who, after all, wasn't really there in the first place... the whiskey was from Inveraray and was very good.

"You have been in space nearly two years," Lermontov said. "You have not seen your father-in-law in that time?"

"More like three since Martin and I really talked about anything," Ramsey said. "We—we remind each other too much of Barbara Jean and Harold."

The pain in Ramsey's face was reflected as a pale shadow in Lermontov's eyes. "But you knew he had become chairman of the appropriations committee."

"Yes."

"The Navy's friend, Grand Senator Grant. Without him these last years would have been disaster for us all. For the Navy, and for Earth as well if those politicians could only see it." Lermontov cut himself off with an angry snap. The big eyes matching his steel gray hair focused on Bart. "The new appropriations are worse," the admiral growled. "While you have been away, everything has become worse. Millington, Harmon, Bertram, they all squeeze President Lipscomb's Unity Party in your country, and Kaslov gains influence every day in mine. I think it will not be long before one or the either of the CoDominium sponsors withdraws from the treaties, Bart. And after that, war."

"War." Ramsey said it slowly, not believing. After a hundred and fifty years of uneasy peace between the United States and the Soviets, war again, and with the weapons they had...

"Any spark might set it off," Lermontov was saying. "We must be ready to step in. The fleet must be strong, strong enough to cope with the national forces and do whatever we must do."

Ramsey felt as if the admiral had struck him. War? Fleet intervention? "What about the Commanding Admiral? The Grand Senate?"

Lermontov shrugged. "You know who are the good men, who are not.

But so long as the fleet is strong, something perhaps can be done to save Earth from the idiocy of the politicians. Not that the masses are better, screaming for a war they can never understand." Lermontov drank quietly, obviously searching for words, before he turned back to Ramsey. "I have to tell you something painful, my friend. Your father-in-law is missing."

"Missing—where? I told Martin to be careful, that Millington's Liberation Army people..."

"No. Not on Earth. Outsystem. Senator Grant went to Meiji to visit relatives there..."

"Yes." Ramsey felt the memory like a knife in his vitals. "His nephew, Barbara Jean's cousin, an officer in the Diplomatic Corps on Meiji. Grew up in the senator's home. Barbara Jean was visiting him when..."

"Yes." Lermontov leaned closer to Ramsey so that he could touch his shoulder for a moment. Then he took his hand away. "I do not remind you of these things because I am cruel, my friend. I must know—would the senator have tried to find his daughter? After all these years?"

Bart nodded. "She was his only child. As Harold was mine. If I thought there was any chance I'd look myself. You think he tried it?"

"We do." Lermontov signaled Torrin to bring him another drink. "Senator Grant went to Meiji with the visit to his relatives as cover. With the Japanese representation question to come up soon, and the budget after that, Meiji is important. The Navy provided a frigate for transportation. It took the usual route through Colby and around, and was supposed to return the same way. But we have confirmed reports that Senator Grant's ship went instead to the jumpoff point for the direct route."

"What captain in his right mind would let him get away with that?"

"His name was Commander John Grant, Jr. The senator's nephew."

"Oh." Bart nodded again, exaggerating the gesture as he realized the full situation. "Yeah. Johnny would do it if the old man asked. So you came all the way out here for my opinion, Sergei? I can give it quick. Senator Grant was looking for Barbara Jean. So you can write him off and whatever other plans you've got for the goddam Navy you can write off

too. Learn to live without him, Sergei. The goddam jinx has another good ship and another good man. Now if you'll excuse me I want to get back to my ship and get drunk."

Captain Ramsey strode angrily toward the door. Before he reached it the vice admiral's voice crackled through the room. "Captain, you are not excused."

"Sir." Ramsey whirled automatically. "Very well, sir. Your orders?"

"My orders are for you to sit down and finish your drink, Captain." There was a long silence as they faced each other. Finally Ramsey sat at the expensive table.

"Do you think so badly of me, Bart, that you believe I would come all the way out here, meet you secretly, for as little as this?"

Bart looked up in surprise. Emotions welled up inside him, emotions he hadn't felt in years, and he fought desperately to force them back. *No, God, don't let me hope again. Not that agony. Not hope...* But Lermontov was still speaking.

"I will let Professor Stirner explain it to you since I am not sure any of us understand him. But he has a theory, Bart. He believes that the senator may be alive, and that there may be a chance to bring him home before the Senate knows he is missing. For years the Navy has preserved the peace, now a strong fleet is needed more than ever. We have no choice, Bart. If there is any chance at all, we must take it.

Professor Hermann Stirner was a short Viennese with thinning red hair, improbable red freckles, and a neat round belly. Ramsey thought him about fifty, but the man's age was indeterminate. It was unlikely that he was younger, but with regeneration therapy he could be half that again. Rap Torrin brought the professor in through a back entrance.

"Dr Stirner is an intelligence adviser to the fleet," Lermontov said. "He is not a physicist."

"No, no physicist," Stirner agreed quickly. "Who would want to live under the restrictions of a licensed physicist? CoDominium intelligence officers watching every move, suppressing most of your discoveries..." He spoke intently giving the impression of great emotion no matter what he

said. "And most physicists I have met are not seeing beyond the end of their long noses. Me, I worry mostly about politics, Captain. But when the Navy loses ships, I want to know what happened to them. I have a theory about those ships, for years."

Ramsey gripped the arms of his chair until his knuckles were white, but his voice was deadly calm. "Why didn't you bring up your theory before now?"

Stirner eyed him critically. Then he shrugged. "As I said, I am no physicist. Who would listen to me? But now, with the senator gone..."

"We need your father-in-law badly," Lermontov interrupted. "I do not really believe Professor Stirner's theories, but the fleet needs Senator Grant so desperately we will try anything. Let Dr. Stirner explain."

"Ja. You are a bright young CoDominium Navy captain, I am going to tell you things you know already, maybe. But I do not myself understand everything I should know, so you let me explain my own way, ja?" Stirner paced briskly for a moment, then sat restlessly at the table. He gave no chance to answer his question, but spoke rapidly, so that he gave the impression of interrupting himself.

"You got five forces in this universe we know about, ja? Only one of them maybe really isn't in this universe, we do not quibble about that, let the cosmologists worry. Now we look at two of those forces, we can forget the atomics and electromagnetics. Gravity and the Alderson force, these we look at. Now you think about the universe as flat like this table, eh?" He swept a pudgy hand across the roseteak surface. "And wherever you got a star, you got a hill that rises slowly, gets all the time steeper until you get near the star when it's so steep you got a cliff. And you think of your ships like roller coasters. You get up on the hill, aim where you want to go, and pop on the hyperspace drivers. Bang, you are in a universe where the Alderson effect acts like gravity. You are rolling downhill, across the table, and up the side of the next hill, not using up much potential energy, so you are ready to go again somewhere else if you can get lined up right, O.K.?"

Ramsey frowned. "It's not quite what we learned as middies—you've got ships repelled from a star rather than—"

"Ja, ja, plenty of quibble we can make if we want to. Now, Captain, how is it you get out of hyperspace when you want to?"

"We don't," Ramsey said. "When we get close enough to a gravity source, the ship comes out into normal space whether we want it to or not."

Stirner nodded. "Ja. And you use your photon drivers to run around in normal space where the stars is like wells, not hills, at least thinking about gravities. Now, suppose you try to shoot past one star to another, all in one jump?"

"It doesn't work," Ramsey said. "You'd get caught in the gravity field of the in-between star. Besides, the Alderson paths don't cross each other. They're generated by stellar nuclear activities, and you can only travel along lines of equal flux. In practice that means almost line of sight, with range limits, but they aren't really straight lines..."

"Ja. O.K. That's what I think is happening to them. I think there is a star between A-7820 and 82 Eridani, which is the improbable name Meiji's sun is stuck with."

"Now wait a minute," Admiral Torrin protested. "There can't be a star there, Professor. There's no question of missing it, not with our observations. Man, do you think the Navy didn't look for it? A liner and an explorer class frigate vanished on that route. We looked, first thing we thought of."

"Suppose there is a star there but you are not seeing it?"

"How could that be?" Torrin asked.

"A Black Hole, Admiral. Ja," Stirner continued triumphantly. "I think Senator Grant fell into a Black Hole."

Ramsey looked puzzled. "I seem to remember something about Black Holes, but I don't remember what."

"Theoretical concept," Stirner said. "Hundred, hundred and fifty years ago, before the CoDominium Treaty puts a stop to so much scientific research. Lots of people talk about Black Holes then, but nobody ever finds any, so now there's no appropriations for licensed physicists to work on them."

"But way back we have a man named Schwartzchild, Viennese chap, he

thinks of them." Stirner puffed with evident pride. "Then another chap, Oppenheimer, and some more, all make the calculations. A Black Hole is like a neutron star that goes all the way. Collapsed down so far, a whole star collapsed to maybe two, three kilometers diameter. Gravity is so tough nothing gets out. Not light; not anything gets out of the gravity well. Infinite red shift. Some ways a Black Hole isn't even theoretically inside this universe."

The others looked incredulous and Stirner laughed. "You think that is strange? There was even talk once about whole galaxies, a hundred billion stars, whole thing collapsed to smaller than the orbit of Venus. They wouldn't be in the universe for real either."

"Then how would Black Holes interact with—oh," Rap Torrin said, "gravity. It still has that."

Stirner's round face bobbed in agreement. "Ja, ja, which is how we know is no black galaxy out there. Would be too much gravity, but there is plenty room for a star. Now one thing I do not understand though, why the survey ship gets through, others do not. Maybe gravity changes for one of those things, ja?"

"No, look, the Alderson path really isn't a line of sight, it can shift slightly—maybe just enough!" Torrin spoke rapidly. "If the geometry were just right, then sometimes the Hole wouldn't be in the way..."

"O.K.," Stirner said. "I leave that up to you Navy boys. But you see what happens, the ship is taking sights or whatever you do when you are making a jump, the captain pushes the button, and maybe you come out in normal space near this Black Hole. Nothing to see anywhere around you. *And no way to get back home.*"

"Of course." Ramsey stood, twisted his fingers excitedly. "The Alderson effect is generated by nuclear reactions. And the dark holes—"

"Either got none of those, or the Alderson force stuffs is caught inside the Black Hole like light and everything else. So you are coming home in normal space or you don't come home at all."

"Which is light-years. You'd never make it." Ramsey found himself near the bar. Absently he poured a drink. "But in that case—the ships can sustain themselves a long time on their fuel!"

"Yes." Lermontov said it carefully. "It is at least possible that Senator Grant is alive. If his frigate dropped into normal space at a sufficient distance from the Black Hole so that it did not vanish down."

"Not only Martin," Bart Ramsey said wonderingly. His heart pounded. "Barbara Jean. And Harold. They were on a Norden Lines luxury cruiser, only half the passenger berths taken. There should have been enough supplies and hydrogen to keep them going five years, Sergei. More than enough!"

Vice Admiral Lermontov nodded slowly. "That is why we thought you should go. But you realize that..."

"I haven't dared hope. I've wanted to die for five years, Sergei. Found that out about myself, had to be careful. Not fair to my crew to be so reckless. I'll go after Martin and—I'll go. But what does that do for us? If I do find them, I'll be as trapped as they are."

"Maybe. Maybe not." Stirner snorted. "Why you think we came out here, just to shake up a captain and maybe lose the Navy a cruiser? What made me think about this Black Hole business, I am questioning a transportee. Sentence to the labor market on Tanith, the charge is unauthorized scientific research. I look into all those crazies, might be something the Navy can use, ja? This one was fooling around with gravity waves, theories about Black Holes. Hard to see how the Navy could use it. I was for letting them take this one to Tanith when I start to think, we are losing those ships coming from Meiji, and click! So I pulled the prisoner off the colony ship."

"And he says he can get us home from a dark hole in blank space?" Ramsey asked. He tried to suppress the wave of excitement that began in his bowels and crept upward until he could hardly speak. Not hope! Hope was an agony, something to be dreaded. It was much easier to live with resignation...

"Ja. Only is not a him. Is a her. Not very attractive her. She *says* she can do this." Stirner paused significantly.

"Miss Ward hates the CoDominium, Bart," Lermontov said carefully. "With what she thinks is good reason. She won't tell us how she plans to get the ship home."

"By God, she'll tell me!" *Why can't anything be simple? To know Barbara Jean is dead, or to know what mountain to climb to save her... If I can't think of something we can borrow a State Security man from the—*"

"No." Lermontov's voice was a flat refusal. "Leave aside the ethics of the situation, we need this girl's creative energies. You can get that with brainscrubs."

"Maybe." *And maybe I'll try it anyway if nothing else works. Barbara Jean, Barbara Jean ...* "Where is this uncooperative scientist?"

"On Ceres." Vice Admiral Lermontov stretched a long arm toward the bar and poured for everyone. Stirner swished his brandy appreciatively in a crystal snifter. "Understand something, Bart," the Admiral said. "Miss Ward may not know a thing. She may hate us enough to destroy a CD ship even at the cost of her life. You're gambling on a theory we don't know exists and could be wrong even if she has one."

"So I'm gambling. My God, Sergei, do you know what I've been through these last years? It isn't normal for a man to brood like I do, you think I don't know that? That I don't know you whisper about it when I'm not around? Now you say there's a chance but it might cost my life. *You're* gambling a cruiser you can't spare, my ship is worth more to the Navy than I am."

Lermontov ignored Ramsey's evaluation, and Bart wished it had been challenged. But it was probably true, although the old Bart Ramsey was something else again, a man headed for the job Sergei held now...

"I am gambling a ship because if we do not get Martin Grant back in time for the appropriations hearings, I will lose more than a ship. We might lose half the fleet."

"Ja, ja," Stirner sighed. He shook his round head sadly, slowly, a big gesture. "It is not usual that one man may be so important, I do not believe in the indispensable-man theory myself. Yet, without Senator Grant I do not see how we are getting the ships in time or even keeping what we have, and without those ships... but maybe it is too late anyway, maybe even with the senator we cannot get the ships, or with the ships we can still do nothing when a planet full of people are determined to kill themselves."

"That's as it may be," Lermontov said. "But for now we need Senator Grant. I'll have the prisoner aboard *Daniel Webster* in four hours, Bart. You'll want to fill the tanks. Trim the crew down to minimum also. We must try this, but I do not really give very good odds on your coming home."

"STAND BY FOR JUMPOFF. Jump stations, man your jump stations." The unemotional voice of the officer of the watch monotoned through steel corridors, showing no more excitement than he would have used to announce an off-watch solido show. It took years to train that voice into Navy officers, but it made them easier to understand in battle. "Man your jump stations."

Bart Ramsey looked up from his screens as First Lieutenant Trevor ushered Marie Ward onto the bridge. She was a round, dumpy woman, her skin a faint red color. Shoulder length hair fell almost straight down to frame her face, but dark brown wisps poked out at improbable angles despite combings and hair ribbons. Her hands were big, as powerful as a man's, and the nails, chewed to the quick, were colorless. When he met her Ramsey had estimated her age in the mid-thirties and was surprised to learn she was only twenty-six.

"You may take the assistant helmsman's acceleration chair," Ramsey told her. He forced a smile. "We're about to make the jump to Meiji." In his lonely ship. She'd been stripped down, empty stations all through her.

"Thank you, Captain." Marie sat and allowed Trevor to strap her in. The routine for jumpoff went on. As he listened to the reports, Ramsey realized Marie Ward was humming.

"What is that?" he asked. "Catchy tune..."

"Sorry. It's an old nursery thing. 'The bear went over the mountain, the bear went over the mountain, the bear went over the mountain, to see what he could see.' "

"Oh. Well, we haven't seen anything yet."

" 'The other side of the mountain, was all that he could see.' But it's the third verse that's interesting. 'He fell into a dark hole, and covered himself over with charcoal—' "

"Warning, warning, take your posts for jumpoff."

Ramsey examined his screens. His chair was surrounded by them. "All right, Trevor, make your search."

"Aye, aye, sir."

Lieutenant Trevor would be busy for a while. He had been assigned the job of looking after Marie Ward, but for the moment Ramsey would have to be polite to her. "You haven't told us much about what we're going to see on the other side of that mountain. Why?"

"Captain, if you knew everything I did, you wouldn't need to take me along," she said. "I wish they'd hurry up. I *don't like* starjumps."

"It won't be long now—" Just what do you say to a convict genius? The whole trip out she'd been in everybody's hair, seldom talking about anything but physics. She'd asked the ship's officers about the drive, astrogation, instruments, the guns, nearly everything. Sometimes she was humorous, but more often scathingly sarcastic. And she wouldn't say a word about Black Holes, except to smile knowingly. More and more Ramsey wished he'd borrowed a KGB man from the Soviets...

"WARNING, WARNING. Jumpoff in one minute," the watch officer announced. Alarm bells sounded through the ship.

"Lined up, Captain," Trevor said. "For all I can tell, we're going straight through to 81 Eridani. If there's anything out there, I can't see it."

"Humph," Marie Ward snorted. "Why should you?"

"Yes, but if the Alderson path's intact, the Hole won't have any effect on us," Trevor protested. "And to the best we can measure, that path is there."

"No, no," Marie insisted. "You don't measure the Alderson path at all! You only measure the force, Lieutenant. Then your computer deduces the existence of the path from the stellar geometry. I'd have thought they'd teach you that much anyway. And that you could remember it."

"FINAL WARNING. Ten seconds to jump." A series of chimes, descending in pitch. Marie grimaced. Her mannish hands clutched the

chair arms as she braced herself. At the tenth tone everything blurred for an instant that stretched to a million years.

There is no way to record the time a jump takes. The best chronological instruments record nothing whatever. Ships vanish into the state of nonbeing conveniently called "hyperspace" and reappear somewhere else. Yet it always *seems* to take forever, and while it happens everything in the universe is wrong, *wrong*, WRONG...

Ramsey shook his head. The screens around his command seat remained blurred. "Jump completed. Check ship," he ordered.

Crewmen moved fuzzily to obey despite the protests of tortured nerves. Electronic equipment, computers, nearly everything complex suffers from jump induced transients although there is no known permanent effect.

"Captain, we're nowhere near Meiji!" the astrogator exclaimed. "I don't know *where* we are..."

"Stand by to make orbit," Ramsey ordered. "Around *what*?" Lieutenant Trevor asked. "There's no star out there, Captain. There's nothing!"

"Then we'll orbit nothing." Ramsey turned to Marie Ward. "Well, we've found the damn thing. You got any suggestions about locating it? I'd as soon not fall into it."

"Why not?" she asked. Ramsey was about to smile politely when he realized she was speaking seriously. "According to some theories, a Black Hole is a time/space gate. You could go into it and come out—somewhere else. In another century. Or another universe."

"Is that why the hell you brought us out here? To kill yourself testing some theory about Black Holes and space/time?"

"I am here because the CoDominium Marines put me aboard," she said. Her voice was carefully controlled. "And I have no desire to test any theory. Yet." She turned to Lieutenant Trevor. "Dave, is it really true? There's no star out there at all?"

"It's true enough."

She smiled. A broad, face-cracking smile that, with the thousand meter

stare in her eyes, made her look strangely happy. Insanely happy, in fact. "My god, it worked! There really is a Black Hole..."

"Which we haven't found yet," Trevor reminded her.

"Oh. Yes. Let's see—it should have started as about five stellar masses in size. That's my favorite theory, anyway. When it began to collapse it would have radiated over eighty percent of its mass away. X rays, mostly. Lots of them. And if it had planets, they might still be here... Anyway, it should be about as massive as Sol. There won't be any radiation coming out. X rays, light, nothing can climb out of that gravity well... just think of it, infinite red shift! It really happens!"

"Infinite red shift," Ramsey repeated carefully. "Yes, ma'am. Now, just how do we find this source of tired light?"

"It isn't tired light! That's a very obsolete theory. Next I suppose you'll tell me you think photons slow down when they lose energy."

"No, I—"

"Because they don't. They wouldn't *be* photons if they *could* slow down. They just lose energy until they vanish."

"Fine, but *how do we find it?*"

"It can't reach out and grab you, Captain," she said. The grin wasn't as wide as before, but still she smiled softly to herself. It made her look much better, although the mocking tones didn't help Ramsey's appreciation. "It's just a star, Captain. A very small star, very dense, as heavy as most other stars, but it doesn't have any more gravity than Sol. You could get quite close and still pull away—"

"If we knew which direction was away."

"Yes. Hm-m-m. It will bend light rays, but you'd have to be pretty close to see any effect at all from that..."

"Astrogation!" Ramsey ordered crisply. "How do we find a star we can't see?"

"We're about dead in space relative to whatever stopped us," the

astrogator told him. "We can wait until we accelerate toward it and get a vector from observation of other stars. That will take a while. Or we can see if it's left any planets, but with nothing to illuminate them they'll be hard to find—"

"Yeah. Do the best you can, Mister." Marie Ward was still looking happily at the screens. They showed absolutely nothing. Ramsey punched another button in the arm of his command chair.

"Comm room, sir."

"Eyes, there are ships out there somewhere." *God, I hope there are. Or one ship.* "Find them and get me communications."

"Aye, aye, sir. I'll use the distress frequencies. They might be monitoring those."

"Right. And Eyes, see if your bright electronics and physics boys can think of a way to detect gravity. So far as I can make out that's the only effect that Black Hole has on the real universe."

"On *our* real universe. Imagine a universe in which there are particles with non-zero rest masses able to move faster than light. Where you get rid of energy to go faster. Sentient beings in that universe would think of it as real. It might even be where our ships go when they make an Alderson jump. And the Black Holes could be gates to get you there."

"Yes, Miss Ward," Ramsey said carefully. Two enlisted spacers on the other side of the bridge grinned knowingly at each other and waited for the explosion. They'd been waiting ever since Marie Ward came aboard, and it ought to be pretty interesting. But Ramsey's voice became even softer and more controlled. "Meanwhile, have you any useful suggestions on what we should do now?"

"Find the Hole, of course. Your astrogator seems quite competent. His approach is very reasonable. Yes, quite competent. For a Navy man."

Carefully, his hands moving very slowly, Captain Bartholomew Ramsey unstrapped himself from his command chair and launched himself across the bridge to the exit port. "Take the con, Mr Trevor," he said. And left.

For fifty hours *Daniel Webster* searched for the other ships. Then, with

no warning at all, Ramsey was caught in the grip of a giant vise.

For long seconds he felt as if titanic hands were squeezing him. They relaxed, ending the agony for a brief moment. And tried to pull him apart. The screens blurred, and he heard the sound of rending metal as the hands alternately crushed, then pulled.

Somehow the watch officer sounded General Quarters. Klaxons blared through the ship as she struggled with her invisible enemy. Ramsey screamed, as much in rage and frustration as pain, hardly knowing he had made a sound. He had to take control of his ship before she died, but there were no orders to give. This was no attack by an enemy, but what, what?

The battle damage screen flared red. Ramsey was barely able to see as it showed a whole section of the ship's outer corridors evacuated to space. How many men were in there? Most wouldn't be in armor. *My God! Daniel Webster too? My wife and now my ship?*

Slowly it faded away. Ramsey pulled himself erect. Around him on the bridge the watch crew slumped at their stations. The klaxons continued, adding their confusion, until Ramsey shut them off.

"What—what was it?" Lieutenant Trevor gasped. His usually handsome features were contorted with remembered pain, and he looked afraid.

"All stations report damage," Ramsey ordered. "I don't know what it was, Lieutenant."

"I do!" Marie Ward gasped excitedly. Her eyes darted about in wonder. "I know! Gravity waves from the Black Hole! A tensor field! And these were tensor, not scalar—"

"Gravity waves?" Ramsey asked stupidly. "But gravity waves are weak things, only barely detectable."

Marie Ward snorted. "In your experience, Captain. And in mine. But according to one Twentieth Century theory—they had lots of theories then, when intellectuals were free, Captain—according to one theory if a Black Hole is rotating and a mass enters the Schwartzchild Limit, part of the mass will be converted to gravity waves. *They can* escape from the Hole and affect objects outside it. So can Alderson forces, I think. But they didn't know about the Alderson force then..."

"But—is that going to happen again?" Ramsey demanded. Battle damage reports appeared on his screens. "We can't live through much of that."

"I really don't know how often it will happen," Marie answered. She chewed nervously on her right thumbnail. "I do know one thing. We have a chance to get home again."

"Home?" Ramsey took a deep breath. That depended on what had been done to Danny Boy. A runner brought him another report. Much of the ship's internal communications were out, but the chief engineer was working with a damage-control party. Another screen came on, and Ramsey heard the bridge speaker squawk.

"Repairable damage to normal space drive in main engine room," the toneless voice said. "Alderson drive appears unaffected."

"Gunnery reports damage to laser lenses in number one battery. No estimate of time to repair."

Big rigid objects had broken. Ramsey later calculated the actual displacement at less than a millimeter/meter; not very much, but enough to damage the ship and kill half a dozen crewmen unable to get into battle armor. Explosive decompression wasn't a pretty death, but it was quick.

With all her damage, *Daniel Webster* was only hurt. She could sail, his ship wasn't dead. Not yet. Ramsey gave orders to the damage control parties. When he was sure they were doing everything they could he turned back to the dumpy girl in the assistant helmsman's seat. "How do we get home?"

She had been scribbling on a pad of paper, but her pencil got away from her when she tried to set it down without using the clips set into the arm of the seat. Now she stared absently at her notes, a thin smile on her lips. "I'm sorry, Captain. What did you say?"

"I asked, how do we get home?"

"Oh." She tried to look serious but only succeeded in appearing sly. "I was hasty in saying that. I don't know."

"Sure. Don't you want to get home?"

"Of course, Captain. I'd just love to get back on a colony ship. I understand Tanith has such a wonderful climate."

"Come off it. The Navy doesn't forget people who've helped us. You aren't going to Tanith." He took a deep breath. "We have a rescue mission, Miss Ward. Some of those people have been out here for five years." Five years of that? Nobody could live through five years of that. *O God, where is she? Crushed, torn apart, again and again, her body drifting out there in black space without even a star? Rest eternal grant them, O Lord, and let light perpetual shine upon them...* "How do we get home?"

"I told you, I don't know."

But you do. And come to think of it, so do I. "Miss Ward, you implied that if we knew when a mass would enter the Black Hole, we could use the resulting Alderson forces to get us out of here."

"I'll be damned." She looked at Ramsey as if seeing him for the first time. "The man can actually—yes, of course." She smiled faintly. "I *thought* so before we left Ceres. Theory said that would work..."

"But we'd have to know the timing rather precisely, wouldn't we?"

"Yes. Depending on the size of the mass. The larger it is, the longer the effect would last. I think. Maybe not, though."

Ramsey nodded to himself. There was only one possible mass whose entry into the Hole they could predict "Trevor."

"Sir?"

"One way you might amuse yourself is in thinking of ways to make a ship impact a solar mass not much more than two kilometers in diameter; a star you can't see and whose location you can't know precisely."

"Aye, aye, skipper." Dave Trevor frowned. He didn't often do that and it distorted his features. "Impact, Captain? *But* unless you were making corrections all the way in, you'd probably miss—as it is, the ship would pick up so much velocity that it's more likely to whip right around—"

"Exactly, Lieutenant. But it's the only way home."

One hundred and eight hours after breakout Chief Yeoman Karabian located the other ships. *Daniel Webster's* call was answered by the first frigate sent out to find the Norton liner:

"DANIEL WEBSTER THIS IS HENRY HUDSON BREAK BREAK WE ARE IN ORBIT ELEVEN ASTRONOMICAL UNITS FROM WHATEVER THAT THING DOWN THERE IS STOP WE WILL SEND A CW SIGNAL TO GIVE YOU A BEARING STOP

"THE NORTON LINER LORELEI AND CDSN CONSTELLATION ARE WITH US STOP YOUR SIGNAL INDICATES THAT YOU ARE LESS THAN ONE AU FROM THE DARK STAR STOP YOU ARE IN EXTREME DANGER REPEAT EXTREME DANGER STOP ADVISE YOU MOVE AWAY FROM DARK STAR IMMEDIATELY STOP THERE ARE STRONG GRAVITY FLUXES NEAR THE DARK STAR STOP THEY CAN TEAR YOU APART STOP ONE SCOUTSHIP ALREADY DESTROYED BY GRAVITY WAVES STOP REPEAT ADVISE YOU MOVE AWAY FROM DARK STAR IMMEDIATELY AND HOME ON OUR CW SIGNAL STOP.

"REQUEST FOLLOWING INFORMATION COLON WHO IS MASTER ABOARD DANIEL WEBSTER INTERROGATIVE BREAK BREAK MESSAGE ENDS."

Ramsey read the message on his central display screen, then punched the intercom buttons. "Chief, get this out:

"HENRY HUDSON THIS IS DANIEL WEBSTER BREAK BREAK CAPTAIN BARTHOLOMEW RAMSEY COMMANDING STOP WE WILL HOME ON YOUR BEACON STOP HAVE EXPERIENCED GRAVITY STORM ALREADY STOP SHIP DAMAGED BUT SPACE-WORTHY STOP

"IS SENATOR MARTIN GRANT ABOARD CONSTELLATION INTERROGATIVE IS MRS RAMSEY THERE INTERROGATIVE BREAK MESSAGE ENDS."

The hundred-and-sixty-minute round trip for message and reply would be a lifetime.

"Trevor, get us moving when you've got that beacon," Ramsey ordered. "Pity he couldn't tell us about the gravity waves before we found out the hard way."

"Yes, sir." The acceleration alarm rang through the ship as Trevor prepared the new course. "We can only make about a half G, Captain. We're lucky to get that. We took more damage from that gravity storm than Danny Boy's ever got from an enemy."

"Yeah." *Pity indeed. But communications did all they could. Space is just too big for omni signals, and we had maser damage to boot. Had to send in narrow cones, lucky we made contact this soon even sweeping messages. And no ecliptic here either. Or none we know of.*

"Communications here," Ramsey's speaker announced.

"Yes, Eyes."

"We're getting that homing signal. Shouldn't be any problem."

"Good." Ramsey studied the figures that flowed across his screen. "Take the con, Mr Trevor. And call me when there's an answer from *Henry Hudson*. I'll wait in my patrol cabin." *And a damn long wait that's going to be. Barbara Jean, Barbara Jean, are you out there?*

The hundred and sixty minutes went past. Then another hour, and another. It was nearly six hours before there was a message from the derelicts; and it was in code the Navy used for eyes of commanding officers only.

Captain Ramsey sat in his bare room and stared at the message flimsy. In spite of the block letters from the coding printer his eyes wouldn't focus on the words.

"DANIEL WEBSTER THIS IS HENRY HUDSON BREAK FOLLOWING IS PERSONAL MESSAGE FOR CAPTAIN BARTHOLOMEW RAMSEY FROM GRAND SENATOR MARTIN GRANT BREAK BREAK PERSONAL MESSAGE BEGINS

"BART WE ARE HERE AND ALIVE STOP THE SCOUTSHIP WAS

LOST TO GRAVITY WAVES STOP THE LINER LORELEI THE FRIGATE HENRY HUDSON AND THE FRIGATE CONSTELLATION ARE DAMAGED STOP LORELEI IN SPACEWORTHY CONDITION WITH MOST OF CREW SURVIVING DUE TO HEROIC EFFORTS OF MASTER OF HENRY HUDSON STOP

"BOTH BARBARA JEAN AND ARNOLD ARE WELL STOP REGRET TO INFORM YOU THAT BARBARA JEAN MARRIED COMMANDER JAMES HARRIMAN OF HENRY HUDSON THREE YEARS AGO STOP BREAK END PERSONAL MESSAGE BREAK BREAK MESSAGE ENDS."

Ramsey automatically reached for a drink, then angrily tossed the glass against the bare steel wall. It wouldn't be fair to the crew. Or to his ship. And *Daniel Webster* was still the only wife he had.

The intercom buzzed. "Bridge, Captain."

"Go ahead, Trevor."

"Two hundred eighty plus hours to rendezvous. Captain. We're on course."

"Thank you." *Damn long hours those are going to be. How could she—but that's simple. For all Barbara Jean could know she and the boy were trapped out here forever. I can bet there were plenty of suicides on those ships. And the boy would be growing up without a father.*

Not that I was so much of one. Half the time I was out on patrol anyway. But I was home when he caught pneumonia from going with us to Ogden Base. Harold just had to play in that snow . . .

He smiled in remembrance. They'd built a snowman together. But Harold wasn't used to Earth gravity, and that more than the cold weakened him. The boy never did put in enough time in the centrifuge on Luna Base. Navy kids grew up on the Moon because the Navy was safe only among its own...

Ramsey made a wry face. Hundreds of Navy kids crowding into the big centrifuge... they were hard to control, and Barbara Jean like most mothers hated to take her turn minding them. She needed a hairdo. Or had to go shopping. Or something...

She should have remarried. Of course she should. He pictured Barbara Jean with another man. *What did she say to him when they made love? Did she use the same words? Like our first time, when we—oh, damn.*

He fought against the black mood. *Harriman. James Harriman. Fleet spatball champ seven years ago. A good man. Tough. Younger than Barbara Jean. Harriman used to be a real comer before he vanished. Never married and the girls at Luna Base forever trying to get—never married until now.*

Stop it! Would you rather she was dead? The thought crept through unwanted. *If you would, you'll godammit not admit it, you swine. Not now and not ever.*

She's alive! Bart Ramsey, you remember that and forget the rest of it. Barbara Jean is alive!

Savagely he punched the intercom buttons.

"Bridge. Aye, aye, Captain."

"We on course, Mister?"

"Yes, sir."

"Damage control parties working?"

"Yes, sir." Trevor's voice was puzzled. He was a good first lieutenant, and it wasn't like Ramsey to ride him...

"Excellent." Ramsey slapped the off button, waited a moment, and reached for another whiskey. This time he drank it. And waited.

There was little communication as *Daniel Webster* accelerated, turned over, and slowed again to approach the derelicts. Messages took energy, and they'd need it all. To get out, or to survive if Marie Ward proved wrong with her theories. Someday there'd be a better theory. Lermontov might come up with something, and even now old Stirner would be examining ancient records at Stanford and Harvard. If Ward was wrong, they still had to survive...

"Getting them on visual now," the comm officer reported. The

unemotional voice broke. "Good God, Captain!"

Ramsey stared at the screens. The derelicts were worse than he could have imagined. *Lorelei* was battered, although she seemed intact, but the other ships seemed *bent*. The frigate *Constellation* was a wreck, with gaping holes in her hull structure. *Henry Hudson* was crumpled, almost unrecognizable. The survivors must all be on the Norton liner.

Ramsey watched in horror as the images grew on the screens. *Five years, with all hope going, gone. Harriman must be one hell of a man to keep anyone alive through that.*

When they were alongside Navy routine carried Ramsey through hours that were lifetimes. Like one long continuous Jump. Everything *wrong*.

Spacers took *Daniel Webster's* cutter across to *Lorelei* and docked. After another eternity she lifted away with passengers. CDSN officers, one of the merchant service survivors from *Lorelei*—and the others. Senator Grant. Johnny Grant. Commander Harriman. Barbara Jean, Harold—and Jeanette Harriman, age three.

"I'll be in my cabin, Trevor."

"Yes, sir."

"And get some spin on the ship as soon as that boat's fast aboard."

"Aye, aye, sir."

Ramsey waited. Who would come? It was his ship, he could send for anyone he liked. Instead he waited. Let Barbara Jean make up her own mind. Would she come? And would Harriman be with her?

Five years. Too long, he's had her for five years. But we had ten years together before that. Damned if I don't feel like a Middle on his first prom.

He was almost able to laugh at that.

The door opened and she came in. There was no one with her, but he heard voices in the corridor outside. She stood nervously at the bulkhead, staring around the bare cabin, at the empty desk and blank steel walls.

Her hair's gone. The lovely black hair that she never cut, whacked off short and tangled—God, you're beautiful. Why can't I say that? Why can't I say anything?

She wore shapeless coveralls, once white, but now grimy, and her hands showed ground-in dirt and grease. They'd had to conserve water, and there was little soap. Five years is a long time to maintain a closed ecology.

"No pictures, Bart? Not even one of me?"

"I—I thought you were dead." He stood, and in the small cabin they were very close. "There wasn't anybody else to keep a picture of."

Her tightly kept smile faded. "I—I would have waited, Bart. But we were dead. I don't even know why we tried to stay alive. Jim drove everybody, he kept us going, and then—he needed help."

Ramsey nodded, it was going to be all right. Wasn't it? He moved closer and put his hands on her shoulders, pulling her to him. She responded woodenly, then broke away. "Give me—give me a little time to get used to it, Bart."

He backed away from her. "Yeah. The rest of you can come in now," he called.

"Bart, I didn't mean—"

"It's all right, Barbara Jean. We'll work it out." Somehow.

The boy came in first. He was very hesitant. Harold didn't look so very different. He still had a round face, a bit too plump. But he was *big*. And he was leading a little girl, a girl with dark hair and big round eyes, her mother's him.

Harold stood for a long moment. "Sir—ah," he began formally, but then he let go of the girl and rushed to his father. "Daddy! I knew you'd come get us, I told them you'd come!" He was tall enough that his head reached Bart's shoulder, and his arms went all the way around him.

Finally he broke away. "Dad, this is my little sister." He said it defiantly, searchingly, watching his father's face. Finally he smiled. "She's a nuisance sometimes, but she grows on you."

"I'm sure she does," Ramsey said. It was very still in the bare cabin. Ramsey wanted to say something else, but he had trouble with his voice.

Daniel Webster's wardroom was crowded. There was barely room at the long steel table for all the surviving astrogation officers to sit with Ramsey, Senator Grant, and Marie Ward. They waited tensely.

The senator was thinner than Ramsey had ever seen him despite the short time he'd been marooned. *Constellation* had been hit hard by a gravity storm—it was easier to think of them that way, although the term was a little silly. Now the senator's hands rested lightly on the wardroom table, the tips of the fingers just interlocked, motionless. Like everyone else Senator Grand watched Commander Harriman.

Harriman paced nervously. He had grown a neatly trimmed beard, brown, with both silver and red hairs woven through it. His uniform had been patched a dozen times, but it was still the uniform of the Service, and Harriman wore it proudly. There was no doubt of who had been in command.

"The only ship spaceworthy is *Lorelei*," Harriman reported. "*Henry Hudson* was gutted to keep *Lorelei* livable, and Johnny Grant's *Constellation* took it hard in the gravity storms before we could get him out far enough from that thing."

Senator Grant sighed loudly. "I hope never to have to live through anything like that again. Even out this far you can feel the gravity waves, although it's not dangerous. But in close, before we knew where to go..."

"But *Lorelei* can space?" Ramsey asked. Harriman nodded. "Then *Lorelei* it'll have to be. Miss Ward, explain what it takes to get home again."

"Well, I'm not sure, Captain. I think we should wait."

"We can't wait. I realize you want to stay out here and look at the Black Hole until doomsday, but these people want to go home. Not to mention my orders from Lermontov."

Reluctantly she explained her theory, protesting all the while that they really ought to make a better study. "And the timing will have to be

perfect," she finished. "The ship must be at the jumpoff point and turn on the drive at just the right time."

"Throw a big mass down the hole," Harriman said. "Well, there's only the one mass to throw. *Lorelei*." He stopped pacing for a moment and looked thoughtful. "And that means somebody has to ride her in."

"Gentlemen?" Ramsey looked around the table. One by one the astrogation officers nodded mutely. Trevor, seeing his captain's face, paused for a long second before he also nodded agreement.

"There's no way to be sure of a hit if we send her in on automatic," Trevor said. "We can't locate the thing close enough from out here. We can't send *Lorelei* on remote, either. The time lag's too long."

"Couldn't you build some kind of homing device?" Senator Grant asked. His voice was carefully controlled, and it compelled attention. In the Grand Senate, Martin Grant's speeches were worth listening to, although senators usually voted from politics anyway.

"What would you home on?" Marie asked caustically. "There's nothing to detect. In close enough you should see bending light rays, but I'm not sure. I'm just not sure of anything, but I know we couldn't build a homing device."

"Could we wait for a gravity storm and fly out on that?" Trevor asked. "If we were ready for it, we could make the jump..."

"Nonsense," Harriman snapped. "Give me credit for a little sense, Lieutenant. We tried that. I didn't know what we were up against, but I figured those were gravity waves after they'd nearly wrecked my ships. Where there's gravity there may be Alderson forces. But you can't predict the damn gravity storms. We get one every thousand hours, sometimes close together, sometimes a long time apart, but about a thousand-hour average. How can you be in a position for a jump when you don't know it's coming? And the damn gravity waves do things to the drives."

"Every thousand hours!" Marie demanded excitedly. "But that's impossible! What could cause that—so much matter! Commander Harriman, have you observed asteroids in this system?"

"Yeah. There's a whole beehive of them, all in close to the dark star.

Thousands and thousands of them, it looks like. But they're *really* close, it's a swarm in a thick plane, a ring about ten kilometers thick. It's hard to observe anything, though. They move so fast, and if you get in close the gravity storms kill you. From out here we don't see much."

"A ring—are they large bodies?" Marie asked. Her eyes shone.

Harriman shrugged. "We've bounced radar off them and we deduce they're any where from a few millimeters to maybe a full kilometer in diameter, but it's hard to tell. There's nothing stable about the system, either."

Marie chewed both thumbnails. "There wouldn't be," she said. She began so softly that it was difficult to hear her. "There wouldn't be if chunks keep falling into the Hole. Ha! We won't be able to use the asteroids to give a position on the Black Hole. Even if you had better observations, the Hole is rotating. There must be enormous gravitational anomalies."

Harriman shrugged again, this time helplessly. "You understand, all we ever really observed was some bending light and a fuzzy occultation of stars. We deduced there was a dark star, but there was nothing in our data banks about them. Even if we'd known what a Black Hole was. I don't know how much good it would have done. I burned out the last of the Alderson drives three years ago trying to ride out. We were never in the right position... I was going to patch up *Constellation* and have another stab at it."

Just like that, Ramsey thought. *Just go out and patch up that wreck of a ship*. How many people would even try, much less be sure they could... so three years ago they'd lost their last hope of getting out of there. And after that, Barbara Jean had...

"Did you ever try throwing something down the Hole yourself?" Trevor asked.

"No. Until today we had no idea what we were up against. I still don't, but I'll take your word for it." Harriman drew in a deep breath and stopped pacing. "I'll take *Lorelei* down."

Bart looked past Harriman to a painting on the wardroom bulkhead.

Trevor had liked it and hung it there long ago. John Paul Jones strode across the blazing decks of his flagship. Tattered banners blew through sagging rigging, blood ran in the scuppers, but Jones held his old cutlass aloft.

Well, why not? Somebody's got to do it, why not Harriman? But—but what will Barbara Jean think?

"I want to go too." Marie Ward spoke softly, but everyone turned to look at her. "I'll come with you, Commander Harriman."

"Don't be ridiculous," Harriman snapped.

"Ridiculous? What's ridiculous about it? This is an irreplaceable opportunity. We can't leave the only chance we'll ever have to study Black Holes for an amateur. There is certainly nothing ridiculous about a trained observer going." Her voice softened. "Besides, you'll be too busy with the ship to take decent observations."

"Miss Ward," Harriman compelled attention although it was difficult to say exactly why. Even though Ramsey was senior officer present, Harriman seemed to dominate the meeting. "Miss Ward, we practically rebuilt *Lorelei* over the past five years. I doubt if anyone else could handle her, so I've *got* to go. But just why do you want to?"

"Oh—" the arrogant tone left her voice. "Because this is my one chance to do something important. Just what am I? I'm not pretty." She paused, as if she hoped someone would disagree, but there was only silence.

"And no one ever took me seriously as an intellectual. I've no accomplishments at all. No publications. Nothing. But as the only person ever to study a Black Hole, I'll be recognized!"

"You've missed a point." Ramsey spoke quickly before anyone else could jump in. His voice was sympathetic and concerned. "We take you seriously. Admiral Lermontov took you so seriously he sent this cruiser out here. And you're our only expert on Black Holes. If Commander Harriman's attempt fails or for any other reason we don't get out of this system on this try, you'll have to think of something else for us."

"But—"

Harriman clucked his tongue impatiently. "Will *Lorelei* be mass enough, Miss Ward?"

"I don't know." She answered softly, but when they all stared at her she pouted defensively. "Well, I don't! How could I! There should be more than enough energy but I don't *know!*" Her voice rose higher. "If you people hadn't suppressed everything we'd have more information. But I've had to work all by myself, and I—"

Dave Trevor put his hand gently on her arm. "It'll be all right. You haven't been wrong yet."

"Haven't I?"

Senator Grant cleared his throat. "This isn't getting us anywhere at all. We have only one ship capable of sailing down to that Hole and only one theory of how to get away from here. We'll just have to try it."

There was a long silence before Bart spoke. "You sure you want to do this, Commander?" Ramsey cursed himself for the relief he felt, knowing what Harriman's answer would be.

"I'll do it, Captain. Who else could? Let's get started."

Ramsey nodded. "*If twere done, 'twere best done quickly...* what was that from? Shakespeare? "Mr. Trevor, take an engineering crew over to *Lorelei* and start making her ready. Get all the ship's logs too."

"Logs!" Marie smiled excitedly. "Dave, I want to see those as soon as possible."

As Trevor nodded agreement, Ramsey waved dismissal to the officers. "Commander Harriman, if you'd stay just a moment..."

The wardroom emptied. There was a burst of chatter as the others left. Their talk was too spirited, betraying their relief. *They* didn't have to take *Lorelei* into a Black Hole. Ramsey and Harriman sat for what seemed like a long time.

"Is there something I can say?" Ramsey asked.

"No. I'd fight you for her if there wasn't a way home. But if there's any

chance at all—you'll take care of Jeanette, of course." Harriman looked at the battered mug on the table, then reached for the coffee pot. After years in space he didn't notice the strange angle the liquid made as it flowed into the cup under spin gravity. "That's fine coffee, Captain. We ran out, must be three, four years ago. You get to miss coffee after a while."

"Yeah." *What the Hell can I say to him? Do I thank him for not making me order him to take that ship in? He really is the only one who could do it, and we both knew that.* Unwanted, the image of Barbara Jean in this man's arms came to him. Ramsey grimaced savagely. "Look, Harriman; there's got to be some way we can—"

"There isn't and we both know it. Sir. Even if there were, what good would it do? We can't both go back with her."

And I'm glad it's me who's going home, Ramsey thought. *Hah. The first time in five years I've cared about staying alive. But will she ever really be mine again?*

Was that all that was wrong with me?

"Your inertial navigation gear working all right?" Harriman asked. "Got an intact telescope?"

"Eh? Yeah, sure."

"You shouldn't have too much trouble finding the Jumpoff point, then."

"I don't expect any." Marie Ward's ridiculous song came back to him. "He fell into a dark hole, and covered himself over with charcoal, he went back over the mountain—" But Harriman wouldn't be going back over the mountain. Or would he? What was a Black Hole, anyway? Could it really be a time tunnel?

Harriman poured more coffee. "I better get over to *Lorelei* myself. Can you spare a pound of coffee?"

"Sure."

Harriman stood. He drained the mug. "Don't see much point in coming back to *Daniel Webster* in that case. Your people can plot me a course and send it aboard *Lorelei*." He flexed his fingers as if seeing them for the first

time, then brushed imaginary lint from his patched uniform. "Yeah. I'll go with the cutter. Now."

"Now? But don't you want to—"

"No, I think not. What would I say?" Harriman very carefully put the coffee mug into the table rack. "Tell her I loved her, will you? And be sure to send that coffee over. Funny the things you can get to miss in five years."

"DANIEL WEBSTER THIS IS LORELEI BREAK BREAK TELL TREVOR HIS COURSE WAS FINE STOP I APPEAR TO BE ONE HALF MILLION KILOMETERS FROM THE BLACK HOLE WITH NO OBSERVABLE ORBITAL VELOCITY STOP WILL PROCEED AT POINT I G FROM HERE STOP STILL CANNOT SEE THAT BEEHIVE AT ALL WELL STOP NOTHING TO OBSERVE IN BEST CALCULATED POSITION OF BLACK HOLE STOP TELL MARIE WARD SHE IS NOT MISSING A THING STOP BREAK MESSAGE ENDS."

Barbara Jean and her father sat in Captain Ramsey's cabin. Despite the luxury of a shower she didn't feel clean. She read the message flimsy her father handed her.

"I ought to say something to him, hadn't I? Shouldn't I? Dad, I can't just let him die like this."

"Leave him alone, kitten," Senator Grant told her. "He's got enough to do, working that half-dead ship by himself. And he has to work fast. One of those gravity storms while he's this close and—" Grant shuddered involuntarily.

"But—God, I've made a mess of things, haven't I?"

"How? Would you rather it was Bart taking that ship in there?"

"No. No, no, no! But I still—wasn't there any other way, Daddy? Did somebody *really* have to do it?"

"As far as I can tell, Barbara Jean. I was there when Jim volunteered. Bart tried to talk him out of it, you know."

She didn't say anything.

"You're right, of course," Grant sighed. "He didn't try very hard. There wasn't any point in it anyway. Commander Harriman was the obvious man to do it. You didn't enter the decision at all."

"I wish I could believe that."

"Yes. So does your husband. But it's still true. Are you coming down to the bridge? I don't think it's a good idea but you can."

"No. You go on, though. I have to take care of Jeanette. Bill Hartley has her in the sick bay. Daddy, what am I going to do?"

"You're going to go home with your husband and be an admiral's lady. For a while, anyway. And when there aren't any admirals because there isn't any fleet, God knows what you'll do. Make the best of it like all the rest of us, I guess."

The bridge was a blur of activity as they waited for *Lorelei* to approach the Black Hole. As the minutes ticked off, tension grew. A gravity storm just now would wipe out their only chance.

Finally Ramsey spoke. "You can get the spin off the ship, Mr Trevor. Put the crew to jump stations."

"Aye, aye, sir."

"Can we talk to Harriman still?" Senator Grant asked. Ramsey's eyes flicked to the screens, past the predicted time of impact to the others, taking in every detail. "No." He continued to look at the data pouring across the screens. Their position had to be right. Everything had to be right, they'd get only the one chance at best... "Not to get an answer. You could get a message to *Lorelei* but before we'd hear a reply it'll be all over."

Grant looked relieved. "I guess not, then."

"Damnedest thing." Harriman's voice was loud over the bridge speaker. "Star was occulted by the Hole. Made a bright ring in space. Real bright. Just hanging there, never saw anything like it."

"Nobody else ever will," Marie Ward said quietly. "Or will they? Can the Navy send more ships out here to study it? Oh, I wish I could see!"

They waited forever until Harriman spoke again. "Got a good position fix," they heard. "Looks good, Ramsey, damn good."

"Stand by for jumpoff," Bart ordered. Alarm bells rang through *Daniel Webster*.

"Another bright ring. Must be getting close."

"What's happening to his voice?" Senator Grand demanded.

"Time differential," Marie Ward answered. "His ship is accelerating to a significant fraction of light velocity. Time is slowing down for him relative to us."

"Looks good for jump here, skipper," Trevor announced.

"Right." Bart inspected his screens again. The predicted time to impact ticked off inexorably, but it was only a prediction. Without a more exact location of the Hole it couldn't be perfect. As Ramsey watched, the ship's computers updated the prediction from Harriman's signals.

Ramsey fingered the keys on his console. The Alderson drive generators could be kept on for less than a minute in normal space, but if they weren't on when *Lorelei* hit... he pressed the key. *Daniel Webster* shuddered as the ship's fusion engines went to full power, consuming hydrogen and thorium catalyst at a prodigal rate, pouring out energy into the drive where it—vanished.

Into hyperspace, if that was a real place. Or on the other side of the Lepton Barrier. Maybe to where you went when you fell through a Black Hole if there was anything to that theory. Marie Ward had been fascinated by it and had seen nothing to make her give it up.

Wherever the energy went, it left the measurable universe. But not all of it. The efficiency wasn't that good. The drive generators screamed...

"There's another bright ring. Quite a sight. Best damn view in the universe." The time distortion was quite noticeable now. Time to impact loomed big on Ramsey's screens, seconds to go.

Marie Ward hummed her nursery rhyme. Unwanted, the words rang through Ramsey's head. "He fell into a dark hole—" The time to impact clicked off to zero. Nothing happened.

"Ramsey, you lucky bastard," the speaker said. "Did you know she kept your damned picture the whole time? The whole bloody time, Ramsey. Tell her—"

The bridge blurred. There was a twisted, intolerable, eternal instant of agony. And confusion. Ramsey shook his head. The screens remained blurred.

"We—we're in the 81 Eridani system, skipper!" Trevor shouted. "We—hot damn, we made it!"

Ramsey cut him off. "Jump completed. Check ship."

"It worked," Marie Ward said. Her voice was low, quiet, almost dazed. "It really worked." She grinned at Dave Trevor, who grinned back. "Dave, it worked! There *are* Black Holes, and they *do* bend light, and they *can* generate Alderson forces, and I'm the first person to ever study one! Oh!" Her face fell.

"What's wrong?" Trevor asked quickly.

"I can't publish." She pouted. That was what had got her in trouble in the first place. The CoDominium couldn't keep people from thinking. *Die Gedanken, Sie sind frei*. But GDI could ruthlessly suppress books and letters and arrest everyone who tried to tell others about their unlicensed speculations.

"I can arrange something," Senator Grant told her. "After all, you're *the* expert on Black Holes. We'll see that you get a chance to study them for the fleet." He sighed and tapped the arm of his acceleration chair then whacked it hard with his open palm. "I don't know. Maybe the CoDominium Treaty wasn't such a good idea. We got peace, but—you know, all we ever wanted to do was keep national forces from getting new weapons. Just suppress *military* technology. But that turned out to be nearly everything. And did we really get peace?"

"We'll need a course, Mr Trevor," Ramsey growled. "This is still a Navy ship. I want the fastest route home."

Home. Sol System, and the house in Luna Base compound. It's still there. And I'll leave you, Daniel Webster, but I'll miss you, old girl, old boy, whatever you are. I'll miss you, but I can leave you.

Or can I? Barbara Jean, are you mine now? Some of you will always belong to Jim Harriman. Five goddam years that man kept his crew and passengers alive, five years when there wasn't a shred of hope they'd get home again. She'll never forget him.

And that's unworthy, Bart Ramsey. Neither one of us ought to forget him.

"But I still wonder," Marie Ward said. Her voice was very low and quiet, plaintive in tone. "I don't suppose I'll ever know."

"Know what?" Ramsey asked. It wasn't hard to be polite to her now.

"It's the song." She hummed her nursery rhyme. "What did he really see on the other side of the mountain?"