

**The Last Voyage
Of the Aguila Proesti**

By **Frank Clarke**
Copyright 2019

Chapters

1 - PROLOGUE.....	3
2 - JANET.....	11
3 - PETR.....	24
4 - FLETCHER.....	37
5 - RELASTA COMMARA	47
6 - ORIENTATION.....	56
7 - VOIDWARD.....	64
8 - SURVEY.....	73
9 - FEET ON THE GROUND.....	82
10 - HEAD IN THE CLOUDS.....	92
11 - AGUILA PROESTI.....	103
12 - SMALLER.....	113
13 - HOMEWARD BOUND.....	125
14 - RENDEZVOUS.....	130
15 - A FAST SHIP.....	140
16 - IN HARM'S WAY.....	152
17 - SEMINARS.....	163
18 - ENCOUNTER WITH A GHOST.....	176
19 - VENDETTA.....	191
20 - EPILOGUE.....	204

1 - PROLOGUE

Piraeus' engines fired retro, slowing it to maneuvering speed. The Gra ships chasing it now closed it even faster. As Piraeus wheeled to face them, Irina Dzudek ordered her 23rd Rangers: "Execute Offensive-F".

Across the cool blackness of space streams of blaster energy splashed on the deflectors of the nearest Gra ships. A cluster of small attack vessels lanced toward the Gra fleet and were vaporized by Gra weapons, but not before two of them had dumped their entire stock of torpedoes into the middle of the oncoming forces, crippling or destroying several ships.

The scene was total chaos with ships alternately firing their weapons and side-stepping return fire. Two torpedoes inbound from the Gra attack-ships skipped off Piraeus' deflectors and one of them exploded, wiping out the port deflector generator. Piraeus, now actively closing the Gra ships, pumped a clutch of torpedoes directly at them. As they had done on several other occasions, the Gra ships responded by splitting and veering away, one above, one below, exposing in one case their topside and in the other the underside, the two places where Gra technology and planning had calculated were the least likely areas for an attack.

As they veered away, waiting robot torpedo platforms enclosing them in a ring all fired more or less simultaneously at the weakest spots their programming could identify. One Gra ship was struck in the main matter-antimatter reactor chamber and it disappeared much the way a light bulb burns out. The second Gra ship took a torpedo on its power bridge and split into two drifting, powerless, helpless fragments, the pieces twirling away into the vacuum.

Seeing the bulk of their attack force wiped out as with the wave of a hand, the remainder of the Gra ships reduced speed and made to turn away, to run, to escape, but it was not to be. As they turned they were met by a second squadron of the 23rd Rangers who, like hawks among pigeons, killed them all, efficiently and without malice.

Surveying the carnage left behind the ships of her fleet, their commander smirked inwardly at the naïveté of what should have been seasoned Gra warriors and silently congratulated herself on the obvious success of all the training she had forced them to endure over the last — how many years had it been? — eight? — and it had all paid off this very day. "Reform," Dzudek commanded them. "There's more

work to be done. That was only the vanguard. Let's go get the main body."

"Caladar hailing us, sir" her communications tech advised her.

"Visual," Dzudek ordered. As the image formed on the main holographic viewer she spoke to the life-sized image standing before her. "Yes, Captain —"

Caladar's captain seemed somewhat bedraggled. "Wing, we request permission to disengage. My crew is fried —"

"Denied," she snapped back at him, not hiding her annoyance. "Reform. Take your assigned position."

"Wing," he pleaded, "we have been on condition red for over eighty hours. None of my crew has had any sleep except for the ones who have fallen down. I rate their readiness as zero."

"Caladar," she addressed him using the name of his ship (for, indeed, the captain *is* his ship), "there isn't one ship of this battle group that can't say that. We should engage their main body in another two hours. If we don't, our losses so far will have been for nothing. Is that what you want?"

"Nobody wants that," he snapped back, at least as annoyed as she. "I'm telling you that my crew's condition is such that we will be unable to function as a warship in two hours, we will provide no benefit to the offensive, and we will be destroyed. Is that what you want?"

"Reform," she demanded with finality. "Take your assigned position." Turning to the ensign she ordered "Off screen" and the image dissolved.

No sooner had Caladar been taken care of than the communications tech announced: "Girolais hailing us, sir."

Dzudek sat down heavily into her command chair. In her heart she knew what was coming. "Visual," she ordered.

The image of Girolais' commanding officer appeared in the viewer area and he spoke, exasperation clearly evident in his voice: "Wing, Girolais is, as you said, in no better shape than Caladar. My estimate of our operational readiness is zero, also."

The ensign turned to her, a worried look on her face, not wanting to give her commander more bad news, but having little in the way of 'choice': "Relasta Commara hailing us — Palamaus hailing us — Eridenda hailing us — Erivetta hailing us — Coridasta hailing us —"

Her mouth was a straight line across as she fought to keep from saying something she would regret. Turning to the communications desk she ordered "Signal to all ships: 'commanders come aboard and meet me in my ready room in ten minutes'. Clear that screen." She turned to speak to her first officer: "Number One, I

want a list of all ships that have not yet reformed onto the Piraeus. Bring it to my ready room."

Dzudek was the last to enter the ready room. She was greeted by eight less-than-happy faces. She looked at no one in particular but was clearly addressing her First Officer: "Number One, read that list."

"Sir," her First Officer began, "Eridenda was the only ship that had already reformed onto the Piraeus at the time you called this meeting. All others were out of position. Relasta Commara and Coridasta appeared to be adrift."

She turned from the waist, her hands clamped behind her back. "Commander Kenjora, please extend my congratulations to Eridenda when you return. Well done." She turned to the others: "Gentlemen, ladies, what —" she paused briefly for effect — "is the problem?"

Kenjora responded for them: "Wing," Kenjora began, using Dzudek's rank -- the formal form of address, "Eridenda appreciates your kind words, but you should know that we had moved to reform on you before you gave that order because we needed the protection of Piraeus' deflectors, that we were maneuvered there by a reserve helmsman just out of the Academy, and that our duty helmsman had collapsed at her post a few moments prior." He, also, paused briefly to let the meaning of his words sink in before delivering the punch-line: "Wing, Eridenda is not now capable of functioning as a warship. I think that's true of most, if not all, of the ships in your battle group." There was a murmur of approval from the assembled officers and Kenjora continued: "Eridenda cannot follow you if you attack the main Gra force."

"Wing," the captain of Relasta Commara interjected, "Relasta Commara is adrift as your first officer speculated. We cannot follow you further —"

She looked from face to upturned face and their meaning slowly worked its way into her consciousness. "Is this a mutiny?"

"Not a mutiny, Wing," one of the braver officers offered. "You won't make that necessary, will you? We simply suggest that the time has come to alter our tactics. We've payed out all the cable we have — there is no more. Some other group — 11th Rangers, perhaps — will have to pick up where we left off. It's time for us to go home."

Their faces told her they all agreed. "Number One, what say you?" she asked.

He turned to look at Dzudek standing at his side. She remained gazing at her officer cadre. "Sir, Piraeus is the only ship in the group that has not sustained serious damage, thanks largely to excellent interdiction by Eridenda, Erivetta, and Palamaus. Given their

conditions, I believe we can't count on them for a repeat performance. If we chase the Gra main force, it will certainly be our last mission, and I doubt we will have a noticeable effect. This is a good time to make repairs." *Not just to the equipment*, he added to himself.

"So say you all?" she asked them. Their heads bobbed in acquiescence. "So ordered." She turned on her heel and left, heading for her quarters. She thought: *"It would have been a good mission. There would have been more than enough glory for all of us. We wouldn't have come back, but it would have been a good mission."*

Her first officer pounded a wall communicator as they all rose to leave. "Bridge, signal fleet: 'retrieve fighters, set course for Naval Depot Two, maximum drive, Piraeus will escort stragglers, do not acknowledge, execute'."

"Bridge aye."

—==++++==—

Admiral Kurt Gervao looked out the window of his office across the grounds of the Navy Department. *This is why I'm an admiral*, he told himself. *I get to do all the dirty jobs.*

Wing Commander Irina Dzudek sat stiffly in a chair waiting for what she was sure was going to be bad news. She hadn't been invited here to her admiral's office. It was a summons.

"Irina, you're getting it from both sides," Kurt Gervao whined. "I can't protect you any longer. Look at this," he pointed to the pile of paper on his desk. "Do you know what these are? These are requests from your Rangers to be transferred to other groups. The eight on top are from your tactical officer staff — all of them. If we were to honor all of these requests, the 23rd Rangers would be reduced to 172 — total, including non-combatants. The 23rd Rangers couldn't start a good barroom brawl. What's worse, they couldn't finish it, either."

"They're just tired, Kurt," she explained. "I've been driving them like slaves. None of them have tasted fresh air in over three months. They need to feel grass underfoot."

"I don't think it's that simple, Irina," Gervao countered. "I have personally interviewed over a dozen of the younger officers whose paperwork is here. Irina, they think you're mad. 'Target Fixation' one of them called it. You see an objective and that's the only thing you see. You don't consider whether the tools at hand, the ships, the crews, are capable of attaining the objective. There is, for you, only the objective." He selected one of the papers from the stack. "Listen to this: 'I will resign my commission before accepting another assignment with The Madwoman of Piraeus'. That's not from some rating, it's from a full-Captain."

"Who would say such a thing?" she demanded.

"It doesn't matter who said it," Gervao snapped back. "That it could be said at all, in writing on an official document by someone with good career prospects — Irina, they are tired and we're fixing that, but after they're no longer tired they will still think you mad. They're not cowards, either: they're not afraid to die. They're afraid of dying for nothing."

"Nothing!" she shrieked, "Nothing? You call the 23rd Rangers' record 'nothing'? I can't believe anyone would say that, especially not you, Kurt."

"Don't put words in my mouth, Irina," Gervao barked at her. "You know exactly what I meant. The 23rd Rangers' record is very nearly an object of religious awe in the War Department. Your 23rd Rangers have four times as many unit citations as your next nearest rival. Admirals feel no qualms about saluting you first. I did so this morning when you first entered. Did you notice? That's what makes what I'm about to do so distasteful —"

"Kurt, please —" There was horror in her voice.

Kurt Gervao sighed. "Irina, I cannot cope with 2,911 requests-for-transfer arriving on my desk in less than three days, all of them from the same battle group. I truly believe this will hurt me more than it hurts you. Wing Commander Dzudek, you are relieved."

She put her hands to her face and sobbed uncontrollably for several minutes. When it seemed she had regained most of her composure, Vice-Admiral Kurt Gervao handed her a tissue. "Go freshen up. We have more to talk about." Blind from the tears, she stumbled her way to his lavatory.

He tapped the intercom button on the wall console. "Sir," his secretary responded.

"Valerie, I have relieved Wing Commander Dzudek," he told her. "Please issue the set of orders we worked up last night."

"Sir, yes, sir."

When she emerged from the washroom, Irina Dzudek appeared even more in control of herself than when she first entered her Admiral's office. She sat down.

"Am I to be decommissioned," she asked, "or just demoted?"

"Let's call it a 'reassignment', shall we?" Gervao suggested. "I want you to have the Big Picture on this, Irina, so I'm officially notifying you that I have turned my office log 'on' preparatory to divulging highly classified information. From this moment on, everything that happens here should be considered 'Most Secret'."

"Aye, aye, sir, 'most secret'," she spoke the ritual words of acknowledgement.

"The Gra have inquired through the Tamar under what conditions we would agree to cease hostilities," Gervao began. "Our

response, in summary, required them to return all prisoners and internees and retire beyond their boundaries as of CGT 164271 and not to move warships across that line without the prior consent of the Galactic Congress. Their counter-offer would permit them to remain in control of the Arvanian system which, they insist, is non-negotiable. The Galactic Congress is seriously considering granting that point if it will bring an end to the war. Oh, yes," Gervao added, "They also asked for your head on a stick. Not in so many words, you understand, but that was the general drift. They would like to try you for what I understand is a substantial list of 'war crimes' for which you will undoubtedly be convicted and executed."

"I see," Irina Dzudek mused aloud. "The Gra are telling the Navy how much of a pain in the ass I am — to them — so the Navy is reassigning me. Tell me that you understand that, Kurt. I don't."

"From a certain perspective, from the diplomat's point of view, say, or the Admiral's, it does make a sort of perverse sense," he explained. "You see battles. I see a war. More to the point, I see a war that is essentially a draw. We and the Gra are slowly nibbling away at each other's sphere of influence, and destroying our respective infrastructures in the process. The side with the last working blaster wins — whatever is left, which will probably be 'not much'.

"I like being an Admiral. I don't like going to war, but I like the idea of losing a war even less, and — make no mistake — we could lose this one. Yes, the Gra think you are a pain in the ass — little more. Do you know what they call you? You are 'the Piraeen Butcher' because you take no prisoners —"

"They fight to the last man," she interrupted.

"How many Gra do you think the 23rd Rangers has fought since this started?" Gervao asked.

"I don't know — eighty thousand?" she offered.

"116,000 is the Navy's estimate of Gra fallen to the 23rd," Gervao quoted the figures. "That's not propaganda. That's for internal use, so it's probably on the low side. How many prisoners have you brought back for interrogation?"

"Seven?" she suggested.

"Exactly seven," Gervao confirmed for her. "We don't even have anything to trade back to them for additional concessions. How many Gra ships have tangled with the 23rd and escaped?"

"None," she declaimed proudly.

"Why?" Gervao demanded.

"That's the way it worked out," she explained with a shrug.

"How about 'General Order, CGT 164344.2: Vessels engaged in combat with Gra forces are to maintain maximum rate of fire until answering fire is suppressed to zero. Signed: Dzudek, Commanding

23rd Rangers'?" Gervao quoted her own orders back to her. "Irina, you've done a wonderful job so far. That the Gra are even suggesting an armistice is largely due to you and the 23rd. Thank you, but the time of the Iron Fist is ending. Now is the time of the Velvet Glove. Please don't make this harder on both of us. Lose this one — please?" he begged.

"What will happen to me?" she asked quietly.

"You're being reassigned out of the 23rd Rangers," Gervao explained. "We expect this news to be in the hands of the Gra promptly. It isn't exactly what they wanted, but it may be enough to mollify them."

"Where am I going?" she asked.

"Galactic Ephemeris Task Group," Gervao informed her.

"How can you do this to me, Kurt?" Her voice took on a shrillness she had worked to suppress since she was a child. "They're — clerks! Chart makers! That's no place for a warrior!"

"It's the best I could do," he snapped. "The politicians want you gone far, far away. GETG will see to it that you won't get within a parsec of a Gra for the next four years. Things should be calmer then."

"When is all this effective?" she asked.

"It happened about twenty minutes ago," Gervao informed her.

"Do I get to select the new commander of Piraeus?" she asked expectantly.

He shook his head. "Sorry, Irina. No one wanted to risk letting you hand-pick a successor. It might have been Garonne or someone else from Palamaus."

"It would have been," she confirmed his fears. "Well, who drew the short straw?"

"Kenjora," Gervao told her. "He's bringing his own first officer from Eridenda. Your FO is getting Eridenda." She frowned. "You don't approve?" he asked.

"You had better get a treaty soon," she warned him. "Kenjora is a good officer, but he's all 'tactics' and no 'strategy'. He won't last a month."

"A shuttle is waiting to return you to the Piraeus," Gervao offered. "Will you need assistance clearing your personals?" She shook her head: *no*. Gervao handed her a sheaf of papers. "Here are your orders. Report to GEHQ not later than 0800 tomorrow."

"Sir, yes, sir," she acknowledged, now 'all business'.

"Stop office log. Close office log. Seal office log, voiceprint authority," Gervao commanded to no one in particular and the computer-voice responded "Office log stopped, closed, sealed, authority Gervao by voice only."

She stood and saluted. He returned the salute, then stepped forward and hugged her. "Irina, good luck. Do as good a job for them as you did for me."

"I will, Kurt," she promised.

"When the dust settles there will be a lecture hall waiting for you at the Naval Academy," Gervao predicted. "You have a lot to teach us."

"Thank you," and she turned and left the room.

His fist came down on the desk hard enough to make his Academy lungeball trophy bounce. "Jop!"

2 - JANET

The computer chirped twice. "You have mail waiting," it told her.

"Who's it from?" Janet asked.

"It's from Tony," the computer replied with a hint of a snicker in its otherwise-mechanical voice. "It's probably a love note — isn't it always? Shall I read it?"

"Haven't you already read it?" she frowned at the computer.

"Of course," the computer confirmed. "I meant 'aloud'."

"No," Janet turned her attention away. "I'm busy. I'll read it later."

"OK," the computer responded cheerily. "You have mail waiting."

"You already told me —" Janet began.

"Not about this mail," the computer insisted. "It arrived while we were arguing about Tony."

"We weren't arguing about Tony," Janet snapped back. "You wouldn't even know how to start an argument."

"I know lots of things," it told her. "I'm a computer."

"Exactly so," she admitted, "but you should phrase it as 'just a computer'."

"Whatever you say," it agreed. "After all, I'm just a computer."

She looked straight at the screen forgetting that she was not actually addressing a real person. "Must you always have the last word?"

"When it's the answer to a question my mistress poses, yes," her computer responded smugly, determined to, indeed, have the last word.

"You're impossible," Janet snarled.

"Whatever you say," it agreed. "After all, I'm just a computer."

She laughed. "Are we in a loop?"

"Insufficient data for a meaningful reply," the computer responded trying to assume an air of erudition, "unless, that is, you subscribe to the Theory of Reciprocal Parallelism. In that case, the answer must be 'yes' since the theory presupposes that all dialogs occur as parts of loops."

"Shut up," Janet ordered.

"Yes, ma'am."

"Ooooh!" she squalled, beginning to think seriously about trading this mouthy machine in on something a little more — compliant. She returned to her original task, an acrylic painting of an

alpine meadow dusted with representatives of all 22 classes of pentafoolium nestled among the low grass. It was something of an 'inside joke': any first-year xenobiology student would know that pentafoolium will not grow in an atmosphere less than 4% carbon monoxide, but one might have to point out that alpine meadows are unlikely places to find that gas.

The obvious trap, of course, is that pentafoolium is cannibalistic and one would never find all 22 classes living in the same general area. One class, perhaps, three at the most. The obvious trap hides the real trap, that in an alpine meadow none of the pentafooliates could survive at all.

This was the latest in a series of 'Impossible Landscapes' she was doing for the Journal of Physics and Chemistry that ran them under the banner: *'Impossible Landscapes: What's wrong with this picture?'*

Janet never bothered to tell the editors until after press-time exactly why each scene was outside the envelope of possibility, although it was clear to them that they had never seen sights such as she painted. Many of the editorial staff, being biochemists at least by training, were able to see the fatal flaw in these scenes. No single editor had yet to crack every one of them, however, and in nineteen issues there were so far only two subscribers who had done so.

The Journal paid Janet a fixed fee per plate and an additional amount that varied depending on the number of incorrect answers submitted. Janet considered it a game: her against the subscribers. Her parents watched the royalties roll in and felt great relief that, if the Naval Academy rejected her application, she could now afford the time to select her permanent career in a leisurely manner.

Tony, meanwhile, was pulling every string he could find to get her application approved. A 2nd-year cadet has some influence over such matters, but only some, and it had to be very surreptitious for Janet was intent on being admitted strictly on her own merit. "What would be the use of going if I weren't the best they could find?" she asked him. "I'd get flushed my very first year." Tony knew she was the best there was. He didn't want the Navy to make a mistake.

Janet's father was an engineer for Nanotech where he designed micromachines. He already had three patents to his name. The next one would make him part-owner of Nanotech and place retirement within the grasp of his 64-year-old hands. He knew he wouldn't retire that early, of course, but the knowledge that it was possible, they told him, often provoked a surprising boost in productivity. Nanotech was looking forward to that at least as much as Van Mar was.

Janet's mother sat on the regional Board of Aldermen, a post for which she received exactly nothing, but that brought her in contact

with a great many influential people. Had Janet known how many strings her mother had pulled and was pulling, how many IOUs her mother had called in (and how many she had issued) to get her daughter's application favored treatment, she would have been appalled, embarrassed, and angry enough to withdraw the paperwork. Janet would never know. Mrs. Mar had seen to that. Her daughter was going to the Naval Academy if she had any say in the matter.

The past seven of Janet's 30 years had been in the nature of an adventure for her. She had hammered her way through the university's undergrad program and won her BS in Xenobiology, minor in Paleobotany, graduating second in a class of 340. Then she took on the Master's program and received her MS in Molecular Physics while simultaneously completing her BA in Cultural Semantics, minor in Visual Arts, becoming only the 145th student in the college's history to double-degree.

This unusual mix of disciplines, wildly variant on the surface yet oddly related as if in a network, was what prompted her Guidance Counselor to suggest she apply to the Navy. The instant the words were clear of her Guidance Counselor's mouth, Janet knew that it was what she had wanted all along.

The next year, Tony applied to the Naval Academy and the year after that, was accepted. As soon as her graduation date was firm, Janet also applied to the Academy. And then —

It was the glistening Navy crest on the letterhead tacked to the Guidance Department bulletin board that first caught her eye, but then she read —



Galactic Ephemeris Task Group announces the availability of four (only) Academic berths aboard the GETG survey ship AGUILA PROESTI departing CGT 164444 ± 40, destination: classified, duration: 40 months ± 5.

Naval experience will be helpful but is not required. Candidates must be unattached, of good character, and eligible for Class 4 Security clearance.

Apply with resume no later than CGT 164380 to —

Destination: classified! It's either into the war zone or someplace completely new. Four berths — I wonder if they could use a xenobiologist?

She had the resume she had shipped with her Academy application copied to the GETG the very same day, beating the deadline easily. Then she forgot about the issue completely. Four berths. She was more likely to be swallowed by an earthquake.

—==+++==—

She put the finishing touches on her alpine meadow, capped her paints, and went downstairs. "Mother, I'm going to the hospital pharmacy. Barre's taking me to dinner."

"You're not eating dinner home?" Her mother sounded disappointed.

"Tomorrow night, Mother, I promise. Kiss Dad for me." and she was out the door and gone.

Van Mar sauntered in a bare twenty minutes later. "Where's Janet?"

"Gone to have dinner with Barre, the apprentice pharmacist at the hospital," her mother told him.

"Is that something serious developing?" he asked with a hint of concern. "What about Tony? I thought she and Tony were working toward an attachment."

"Perhaps if Janet gets her appointment to the Academy," Mrs. Mar began. "Otherwise — I don't see how two people can be very

serious when one's in the Navy and the other isn't. And with the war going so badly —"

"Yes. I've tried not to think about what might happen if Janet wins her appointment," Van Mar continued with increasing concern in his voice. "Everyone is being trained for combat these days to the exclusion of everything else. Oh, well —"

They watched the news on the vid, ate dinner quietly, read for a few hours (he: MicroEngineering Today; she: budget proposals for the upcoming quarter), and turned in early.

—==++++==—

Janet didn't come home early. She and Barre talked while he worked on some of his pharmacology experiments after working hours, they went out for a late dinner, and caught a midnight show at the theater, all of which Janet paid for. She was, she explained, rolling in royalties, and Barre was paying for his own education by working at the hospital.

She got home nearer to two than three, but only by a little, and fell into bed and into sleep virtually simultaneously. The morning sunshine callously woke her a scant four hours later. "Computer, darken the room and wake me at ten," she instructed.

At the stroke of ten, the transmission factor for the windows was changed from 0.5% to 97%. To Janet, who had been lying face up, half-awake for the past ten minutes, it was the visual equivalent of being struck by lightning. "Time to wake up," the computer told her cheerily.

"Ow," she shrieked. "Dark 80%." The transmission factor went instantly to 20% and Janet found she could open her eyes again. "Increase transmission factor gradually to normal daylight over the next hour-and-a-half," she ordered. "Store that as a program synonymous with 'wake me', you son of a bitch, and don't ever use that other method again."

"Whatever you say. After all, I'm just a computer."

"Ooooh!" she fumed and she stomped off to the lavatory to brush her teeth and comb her hair. "Wuff ah re awenda hoday?" she asked, her mouth full of toothpaste and toothbrush.

"I beg your pardon?" the computer prompted.

She rinsed and spat. "What's on the agenda today?" she asked again.

"You have unopened mail from Tony," *Oops*, she thought. "—you have unopened mail from the Navy."

"What? When did that arrive?" she demanded.

"Yesterday, while we were arguing about Tony's —"

"Don't start that again," she snapped. "Open 'navy', read."

The letter said:

ConNav
Galactic Ephemeris HQ
Relasta Commara
Pelause
CGT 164387



To : Janet Mar
From : GETG, Academic Division
Subject : Aguila Proesti

Thank you for your resume. It gives me great pleasure to inform you that you have been chosen to accompany the Aguila Proesti on its next mission. Please signify your acceptance of this academic posting within four solar days. Your acceptance of this offer is your agreement to present yourself, ready for a 45-month assignment, at GEHQ on Pelause not later than 0800 CGT 164404.

This may be used as your travel voucher for one-way economy transport via scheduled carriers to Relasta Commara from your nearest port of embarkation.

Jorg Vitell
Registrar
Academic Division

"Mother!" It wasn't a call, it was a shriek. Her mother all but flew up the stairs, convinced that her only child had severed her leg. Seeing Janet intact did not lessen her apprehension. "What's wrong?" her mother asked breathlessly.

"Read this —" Janet pointed at the screen.

Mrs. Mar took a few seconds to scan the text then turned to Janet. "I don't understand —"

"I saw a notice on the bulletin board at school about academic berths on a GETG survey ship. I sent my resume, the same one I used for the Academy application. They want me," she told her mother. Turning to the computer she instructed: "Computer, develop routing, flights, and space availability to Pelause until CGT 164404. Save. Mother, the Naval Academy hasn't responded yet. What shall I do?"

"The Academy could still turn you down, I suppose," Mrs. Mar mused. "Janet, why did you try for this — this survey ship?"

"Because I want it, Mother," Janet admitted, "I really want it."

"Then take it. If the Academy comes through, you'll just have to tell them they were edged out by a better offer."

Janet nodded then turned toward the computer. "Computer, recite Pelause data, only flights with space available."

The computer began to read the results it had compiled: "Two flights: CGT 164396 arriving Relasta Commara 164398, and CGT 164401 arriving Relasta Commara 164403"

"Book me onto the later flight," she ordered. "Bill the freight to GETG Academic Division. Notify me if the charge is refused. Respond to the memo: 'Offer accepted. Arriving Relasta Commara 164403. As this is my first cruise, please specify any items I am expected to supply myself. Signed...'. Send it."

"Sent," the computer confirmed. "Your passage is confirmed pending approval by GETG."

"Janet, your father will be very pleased," her mother assured her. "I'm going to call him with the news right now." She kissed her daughter's cheek and returned downstairs.

"Computer, show me Tony's note," she ordered.

Dearest Janet,

Good news! Mid-term marks have just been posted and I'm still here! (Just a little joke.) I'm doing quite well so far, maintaining a solid AB at 3.65 points.

I now have a job to while away the idle hours (both of them). I'm working in the Admissions Office and that's the 'real' news I want to tell you. I saw your name on what they call 'the short list'. That's the list of candidates the Academy is really serious about bringing aboard. Janet, I think you're 'in'. Of course, nothing is absolutely certain – the short list will certainly get shorter, but to make it that far is a major accomplishment.

I'm so looking forward to seeing you here for the start of the new term. When we've both been commissioned, we can start planning our future in earnest. Until then, know that I still love you madly.

Tony

She should have read this one first, she thought. What could she now say to Tony? Not much, she mused, and then turned to the computer. "No reply."

—==+++==—

ConNav
The Naval Academy
Palamaus
Piraeus
CGT 164390



To : Janet Mar
From : Admissions

On behalf of the Board of Admissions and the Regents of The Naval Academy, permit me to congratulate you on your acceptance to the Academy.

Should you accept this admission, you will be required to present yourself, ready to begin your studies, at The Naval Academy, Palamaus, Piraeus, not later than 0800 CGT 164478. Round-trip transport to Piraeus with an open return date will be funded by The Naval Academy. You may use this notice as a travel voucher. Attendance at The Naval Academy is contingent upon proper academic and ethical discipline. Full details will be provided during orientation which begins on CGT 164480.

Please signify your acceptance of this admission by a favorable response within four solar days.

Maj. Verna Kooistra
Admissions
The Naval Academy

"Now, what?" Janet wondered aloud.

"Which one do you want?" her father asked.

"I want them both," she admitted with a sigh.

"Let's be realistic, Janet," he told her. "You can't be in two places at the same time. A flipped coin can't be heads and tails. You have to choose one or the other."

"That's the problem," she slumped in her chair. "I already have chosen. Academy cadets are supposed to uphold the highest ethical standards. I don't believe I could now say 'no' to GETG having already said 'yes' and still take the cadet oath. I'm going to have to turn the Academy down. Dad, what's Tony going to say?"

"I'm certain Tony will understand," her father assured her.

"No, what I mean is — he expected me to be commissioned as a Naval officer only a year or two behind him," she sounded really

depressed. "After that, he's planning on marriage — to me. You know how impossible it is to maintain a relationship when one half of the pair is gone for years at a time."

"You must have known that when you accepted the GETG post," her father stopped her. "What are your plans? How do you feel about marriage to Tony?"

"I'm not certain —" Janet admitted, finally.

"Then this is a blessing in disguise," her father opined. "Don't worry about Tony. He'll either wait or find another. You'll either catch up to him or not. Janet, personal relationships do not always proceed with perfect efficiency. There are always losses to friction. Many's the neutron that doesn't start a chain reaction. Do you understand what I'm saying?"

"Yes, Dad, I think I do. Still —"

"In any case, the Academy deserves a reply. Why don't you tell them why you must refuse their offer. They might just defer your admission until you return. In fact, ask them to do just that. After all, you're turning them down because you'll be engaged on Navy business. What better excuse could there be?"

—==+++==—

Date : 164390
To : Maj. Verna Kooistra
From : Janet Mar
Subject : Admission

Sir,

Thank you for your transmission of 164389 granting admission to The Naval Academy. Within the week, I accepted an academic posting aboard the GETG survey ship Aguila Proesti. Ethical considerations now make it impossible for me to accept this conflicting admission to the Academy.

Please accept this as my formal request for a deferred admission to the Academy following completion of my current commission. The Aguila Proesti's mission is not expected to exceed 45 months and may be completed in as little as 35.

I appreciate the great honor that has been shown to me by virtue of your offer, but I would be less than The Naval Academy deserves should I revoke, at this late date, my previous acceptance to GETG, leaving them with an empty berth and too little lead time to fill it. That would also deprive the Confraternity of research undone on account of an unnaturally foreshortened crew.

Please let me have your favorable response as soon as possible. Aguila Proesti will leave Relasta Commara on or after CGT 164404.

Sincerely,

Janet Mar

—==+++==—

"—and you don't know where you're going?" her neighbor asked Janet incredulously.

"Not a clue," Janet admitted. "I thought originally that 'destination: classified' might mean we were going into the war zone, but now I realize that can't be — that would make us spies, and I'm sure none of the Academics signed up for that duty. No, what it means is that we're at war and we're going where the Navy won't be

close by to assist. The Gra will surely know that. This minimizes our risk of running into a Gra patrol."

Everyone in the Mar's neighborhood attended Janet's Going Away Party, and they each demanded a snippet of her time to wish her well on her voyage and to tell her how very proud they were to know the first person from the area to join the Navy.

"I'm not exactly 'joining' the Navy, you know," she reminded them. "This is just a research berth. When I come back, I'll be just-plain-Janet again. You understand that, right?" she explained for what seemed like the thousandth time. "Oh, right," they would always respond. She was certain the message was not getting through. "Janet Mar joined the Navy," the neighborhood children would be told for years to come, "but she applied herself to her studies. If you expect —"

In time, all the hugs were given and all the kisses were placed and all the good-byes were spoken and the neighbors drifted away to their homes, leaving Janet and her parents and a duffel bag containing 'not more than three stone (gross) of irreproducible personalty, including the container'.

They drove in silence to the port. They had already said to each other all the things that needed to be said. A last hug for each and kisses all around, then Janet turned and strode resolutely up the boarding ramp. Her parents stayed long enough to watch the lift-off, and drove silently home.

—==+++==—

ConNav
The Naval Academy
Palamaus
Piraeus
CGT 164405



To : Janet Mar
From : Admissions

Dear Ms. Mar,

Congratulations on your posting to the Aguila Proesti, and thank you for your kind note that will allow us to select another deserving candidate in your place. Academy policy does not permit us to defer admissions beyond the start of the term for which they are issued. This office will, however, be pleased to entertain a revised application on your return.

By copy of this to Captain Irina Dzudek of Aguila Proesti we are requesting that Capt. Dzudek render all assistance in the completion of that application. Again, the Academy's warmest congratulations.

Maj. Verna Kooistra
Admissions

copy: Dzudek, GETG/Aguila Proesti, CNV-211

3 - PETR

The moderator took a deep breath to prepare himself for delivering the coup-de-grace to what he considered incredibly sub-standard work: "—and, further, we find your data that purports to prove the existence of tenuous pockets of antimatter to be unconvincing. Your assumption that matter-antimatter reactions proceed with less than 100% efficiency is unconfirmed by any current research, yours or anyone else's. In short, Mr. Alioth, your entire thesis has been rated 'too speculative' by nearly three-quarters of the Thesis Review Board, including — and this is the most disturbing aspect — your own thesis-mentor.

"Mr. Alioth, this is not doctoral-quality work. I suggest you make an appointment with your thesis-mentor today and begin repairing those parts that can be repaired and rewriting those that can't. That is, if you are still interested in pursuing your Doctorate."

He said nothing in reply, but turned on his heel and walked out of the room. *"It's not speculation, damn it," he told himself, "it's true. Any ass with half a brain can see that it must be true. Just because no one has collected any data doesn't mean no one can collect such data. 'Absence of evidence is not evidence of absence', isn't that what they always say? Jerks! What do they want me to do, build my own starship so I can prove a damn doctoral thesis?"*

Thundering down the corridors, lost in a replay of The Rejection Scene at the Thesis Review Board, Petr saw nothing, heard nothing, and stopped for nothing until a hand reached out and grabbed his elbow, yanking him harshly into a crowd of students milling around the freshly-posted scores for the final examinations in Science.

"My word, Petr, look at your scores! This must be some sort of record: the beastliest four seminars in the catalog and you've summa'd them all," one of his classmates gushed.

"What difference does it make?" he retorted. "My thesis just got shot down."

"'Tenuous Antimatter in High Vacuum'? I told you that would be a tough nut to crack, Petr. What will you do now?" the classmate asked.

"I haven't decided yet, Rollie," Petr replied. "I don't think I can prove my thesis (to the degree the Board will require) without access to a starship, and I don't have the inclination to start over with a new thesis. I should have listened to you, Rollie."

"Have you talked to your mentor?" Rollie asked. "Maybe it can be partitioned and you can get it through piecemeal?"

"I just came from the Review Board and I'm still pretty steamed," Petr admitted. "I thought I might take a few months off, maybe get a job, the dumber the better, to try to shake my mind clear. Know anybody who needs a grunt?"

"Placement Office, of course," Rollie suggested. "They're always looking for a new grunt."

He was three steps past the bulletin board and about to enter the Placement Office when he realized what he had seen. He turned and went back to get a better look.



Galactic Ephemeris Task Group announces the availability of four (only) Academic berths aboard the GETG survey ship AGUILA PROESTI departing CGT 164444 ± 40, destination: classified, duration: 40 months ± 5.

Naval experience will be helpful but is not required. Candidates must be unattached, of good character, and eligible for Class 4 Security clearance.

Apply with resume no later than CGT 164380 to –

All the details went into his pocket notepad and he continued scanning the board for other interesting possibilities, then he sat down and had a nice, long chat with a placement counselor.

Seated before his computer in the privacy of his dorm room, Petr composed a cover letter to be sent with his resume:

"—and I would be particularly interested in any voyage through high-vacuum areas of space that would accommodate broad-spectrum measurement of previously unresearched aspects of such space —" the letter informed any who might consider his application.

He packaged his letter and resume and sent them off through the net to GEHQ.

—==++++==—

When he was very young, Petr Alioth dreamed of joining the Navy and exploring the galaxy. That was back in the days when the

Navy's mission 'out there' was encompassed by the Galactic Ephemeris Task Group and the military aspects of such a life were a minor, a very minor part.

When the explorers stumbled across the Forton Empire, all that changed and the military essentially took over the Navy, relegating GETG to the backwaters of the organization. After the Forton Detente there was a short period of military inactivity until the explorers again made contact with an aggressive species, this time with the Kret. And while the Galactic Congress had not yet reached the stage of open warfare with the Kret, there were many unexplained happenings near their borders with the Galactic Congress, enough that some sort of military hardware was always kept within or near the area. Now they faced the Gra, a bellicose dextroDNA-based species with a high coefficient of territoriality, and the Navy was back on a war-footing.

It was not that he didn't want to fight (although he didn't), but more that Petr stood 2.1m and the Navy's point system for cadet selection penalized very heavily physical characteristics far out of the norm. Petr was 8% underweight for 50th percentile height, 27% underweight for his actual height. Petr was a 'bean pole' and most of what he was missing was muscle mass. He wasn't the typical weakling. He could hold his own in most fights, but that was due more to the reach of his arms than the power behind them. A little power on the end of a very long lever — and when twenty of Petr's little punches are landing for every one that gets through to him, the effect was demoralizing if not exactly devastating.

Then, too, his muscular brain more than made up for what he lacked in arms and legs. From the very earliest stages of science education, Petr had shown a real gift for Physics, especially the physics of high-energy phenomena. In Junior High School Petr built his own blaster as a science fair project. He got an A+ on his project without ever demonstrating it when Fleet Security seized his exhibit and threatened him with incarceration if he built another. In High School, he teamed with another student adept in nanotechnology and together they constructed a fully-functional 0.8g naval vacuum torpedo. This they did demonstrate by blasting a hole nearly clear through a half-meter of reinforced concrete, after which both Petr and his partner were arrested, tried, and convicted on reduced charges of misdemeanor possession of contraband.

That was the end. After that, Petr's older sister (who had raised him after the accidental death of their parents) sat down with him and made him promise not to play with such toys ever again. Petr had given his word to her, but he kept a set of the micromachines, just in case.

—==++++==—

ConNav
Galactic Ephemeris HQ
Relasta Commara
Pelausa
CGT 164362



Dear Mr. Alioth,

Thank you for your resume in response to the Aguila Proesti announcement. It has been forwarded to our Qualifications Review Team for their action and recommendation.

The HQ staff has asked me to contact you regarding the text of your cover letter. Because the Aguila Proesti's destination is classified, its route must also be classified and therefore we cannot offer any assurance that this voyage will fulfill any of the conditions that you are seeking. In view of this, HQ staff asks whether you would, in fact, accept a berth were one offered to you, or shall we discontinue review of your application?

Please give us your response within four solar days. If we do not hear your affirmative response we will, at that time, discontinue review.

Jorg Vitell
Registrar
Academic Division

Four days. At least that gives me time to think about the ramifications. I wonder what they are. He pulled out a note pad and began to formalize what he knew and what could reasonably be guessed:

1. Destination is classified because we're at war
2. We could be at war a long time
3. After the war, destinations might still be classified for other reasons
4. It's the only way I'm going to get near high-vacuum

5. I might meet some interesting naval science-types
6. I'll have a class 4 security clearance and access to lots of classified information
7. I'll be gone 3½ years
8. By the time I get back my enrollment will have expired
9. In 3½ years someone may already have proven my thesis

Well, hello, there's something — If I can convince the Thesis Review Board that this is the only way I might provide the proof they require, they may allow me to take the time for the cruise. It's certainly worth the try, and if they say 'no', I'm no worse off than I am now. And if they agree the registrar will surely freeze my enrollment — probably — maybe.

He called the Board's secretary and got on their agenda for the following afternoon.

"It's quite true," Petr began, "that little or no actual field research has been done in this area. The reason for that is clear: the phenomenon, if it exists at all, exists only at high-vacuum states such as might be found in interstellar space, access to which is, of necessity, severely limited.

"I propose to complete the work on this thesis that you have correctly labeled 'incomplete' and 'speculative' as follows: I have applied for a science berth on a survey ship of the Galactic Ephemeris. There is a fair chance," he lied, "that its voyage will provide me with access to high-vacuum states that I will then measure, merging the results of that study with the main body that you have already reviewed.

"If you agree to this line of attack, I must ask for a deferment of judgement on the current work, for the voyage is expected to last between three and four years.

"If you do not agree to this line of attack, I must tell you that I see no further benefit to proceeding with a defense of my thesis."

The chairman addressed him: "Mr. Alioth, have you considered that your enrollment will expire while you are abroad?"

"I have, Doctor, and I intend to ask the registrar to support your favorable decision by freezing my enrollment during the course of the research. I have no doubt the registrar will be as generous as this board."

"How can we be certain the data brought back will be accurate and unbiased?" another asked.

Petr turned to the questioner and stared for much longer than was actually required for the formulation of an answer. "Do I understand correctly, Doctor, that you are questioning my integrity? If

you are, I shall ask this board for a twenty-minute recess so that you and I may discuss this issue in private."

"Mr. Alioth, what, precisely, are you suggesting?" the questioner asked.

"Doctor, I never permit anyone to question my integrity," Petr informed him. "Never. Never. You know damned well what I'm suggesting, but if you wish, I will state it in unmistakable language: I intend to remove you from this board by taking you behind the building and beating you to death. Alternatively, you will beat me to death, and I will no longer care what this board does." Several of the board gasped at what Petr had the audacity to say.

"Doctor," Petr continued, "I will now have your apology or I will have your presence in the back-alley."

"You shall have neither," his accuser replied smugly.

"Ralf," the chairman addressed him, "you owe the young man his apology. If you don't feel capable of that, I shall grant him his twenty-minute recess." Ralf stared at the chairman open-mouthed, not believing what he had just heard.

"Mr. Alioth, you have my apology," he offered.

"Thank you, Doctor," Petr replied with as much grace as he could manage. "I shall now pretend that you did not ask your question, and you may pretend that it has been satisfactorily answered. Gentlemen," he addressed the whole board, "when may I expect a decision?"

"Mr. Alioth," the chairman spoke, "you may have my decision now. I support your audacious research plan. Gentlemen," he asked turning first one side then the other, "is there anyone who objects to the requested deferment?" There were no objections. "Mr. Alioth, you seem to have won the day. Judgement of your thesis is suspended until three months following your return from your voyage. By the way, what ship will you be sailing?"

"Doctor, if my application is approved, I will leave on the Aguila Proesti in about a month. Thank you all for your consideration. Now if you will excuse me, I still have to sell the registrar on the same plan."

—==+++==—

ConNav
Galactic Ephemeris HQ
Relasta Commara
Pelause
CGT 164364

The logo for ConNav consists of the word "CON" stacked above "NAV". The letters are stylized with a red outline and a white fill. The "O" in "CON" is a solid red circle. The "A" in "NAV" has a red outline and a white fill. The "V" in "NAV" is a solid red shape.

Dear Mr. Alioth,

The Qualifications Review Team has forwarded your file to me with a request that I seek further clarification regarding your criminal record.

Although only a misdemeanor, the QRT is concerned that the offense was Possession of Contraband. As you must know, such an offense aboard a military vessel would constitute a serious criminal offense punishable, in times of war (as now), by death. QRT does not wish to place you into an environment that may be hazardous to your or your shipmates' health and well-being.

Please respond immediately with any information in your possession that may constitute mitigating circumstances. Effective immediately, consideration of your application has been halted.

Jorg Vitell
Registrar
Academic Division

"Well, I guess that's what they're paid to do: make sure everybody is clean as a whistle," Petr admitted to himself. "I suppose I had better get this over with."

Date : 164365
To : Jorg Vitell
Academic Registrar
GETG
From : Petr Alioth
Subject : Contraband

Sir,

The incident to which you refer happened during the Spring of my Junior year in High School.

As part of the science curriculum, each student was required to present a working model illustrating Physical or Engineering accomplishments of the past. A fellow student generated several micromachines illustrating nanotechnology. I used his nanobots to build a working vacuum torpedo similar or identical to those then in use by naval warships, save for the size: a Mark-II vacuum torpedo masses approximately 400 kilos. Mine massed 800 milligrams.

Nonetheless, the demonstration was impressive, so much so that Fleet Security initiated criminal action (Felony Discharge of Artillery) to prevent a recurrence. The jury declined to convict either of us for a felony and reduced the charge to Possession of Contraband on condition that we agreed never again to participate in a similar action.

I wish to point out, however, that the ability to construct a vacuum torpedo is exactly the kind of talent the Navy seeks during these troubled times, and the events of that year ought to be considered a positive factor in my evaluation. Not mentioned in your last letter was my Junior High science project, a blaster weapon barely larger than the standard-issue naval blaster. This item was confiscated by Fleet Security before it could be exhibited.

Sincerely,
Petr Alioth

—==+++==—

ConNav
Galactic Ephemeris HQ
Relasta Commara
Pelause
CGT 164373

The logo for ConNav consists of the word 'CON' in a red, stylized, blocky font above the word 'NAV' in the same style. The letters are outlined and have a slight 3D effect.

To : Petr Alioth
From : GETG, Academic Division
Subject : Aguila Proesti

It gives me great pleasure to inform you that you have been chosen to accompany the Aguila Proesti on its next mission. Please signify your acceptance of this academic posting within four solar days. Your acceptance of this offer is your agreement to present yourself, ready for a 45-month assignment, at GEHQ on Pelause not later than 0800 CGT 164404.

This may be used as your travel voucher for one-way economy transport via scheduled carriers to Relasta Commara from your nearest port of embarkation.

Jorg Vitell
Registrar
Academic Division

—==+++==—



To : Fleet Security
From : Jorg Vitell
Academic Registrar/GETG

Subject : Alioth, Petr

Subject is a candidate for posting aboard GETG Aguila Proesti. Please forward via fax form SS-10 if such exists.

Barely four hours later, Vitell's fax chirped and the requested Security Summary for Petr Alioth rolled into the output tray. He picked it up and glanced through it quickly. It read in part: "—and upon investigation, the device was found to be fully operational. Warned subject that possession of blaster weaponry was prohibited and suggested that a second offense would certainly get him hard time —"

Vitell pressed the communicator bar: "Get me Lin Angst, Fleet Security". There was a brief pause, then a face appeared on the vid-screen:

"Angst."

"Lin, good morning. Jorg Vitell, GETG. Thanks for the quick response on that SS-10. I have an open question and I hope you can direct me to the proper people. The blaster weapon mentioned in that SS-10 — does it still exist?"

"Oh, I doubt it, Jorg," Angst said off-handedly. "It's non-standard. We wouldn't have any use for it except as a curiosity. We generally keep this stuff long enough to satisfy the Statute of Limitations, then plaz it."

"Is there anyone who would know for certain?" Vitell pressed.

"It would have gone to the property room for storage after the investigation. I'll transfer you." Another pause, and a different face appeared on the vid-screen: "Property Room."

"Hi, good morning, Jorg Vitell, GETG. I'm trying to track down a particular item — a home-made blaster —" The property clerk tapped keys on his terminal and reported "I have two. Do you have a case number?"

"No, sorry," Vitell apologized. "The hardware I'm tracing is quite old, twelve years, perhaps. Since you've only got two, how about pulling them and giving me synopses from the case files for them?"

"Sure. Hold on." He was back in a moment with two small tagged devices. "This one's file SARD-10934, case synopsis — constructed by one Petr Alioth —"

"That's it," Vitell stopped him. "How do I take possession of that device?"

"Well, you can't," the clerk told him. "This should have been destroyed years ago. I'm going to have to route it down to the plaz chamber."

"Put a hold on that," Vitell demanded. "We need to do some testing before that device is damaged. Who can requisition property from you?"

"Angst, Chief of Security," the property clerk informed him.

"Transfer me back to him," Vitell ordered.

After a short pause — "Angst."

"Lin, Jorg Vitell again. That blaster is still intact and I'd like Armory to take a close look at it before we ship it off to be destroyed. How do we go about that?"

"Do you have the case number?" Vitell informed him that it was 'SARD-10934'. "No problem," Lin Angst assured him. "I'll ask Armory to do a head-to-toe and send the report on to you."

"Thanks," Jorg Vitell responded. "Have them retain the weapon in case the report raises any additional questions."

"Will do," Angst agreed.

—==++++==—



To : Jorg Vitell, GETG
From : Mariann Quint, Armory

Subject : Case SARD-10934

Per request of Lin Angst, Fleet Security:

The blaster weapon marked SARD-10934 is a home-made device but is otherwise fully functional. The driver is single-phase regenerative as compared to the more typical poly-phase, therefore it would be less effective against personal shields than blasters issued by the Navy. It has a single power setting, roughly equivalent to 'stun'. Its lithium power cell is capable of several hundred firings before cell replacement, but the trigger-switch will not allow a sustained beam. The device cannot be overpeaked and is in only this respect superior to standard-issue. Physically, the device is dimensionally larger (but lighter) than standard-issue.

The device is being retained at Armory pending your instructions regarding disposition.

—==+++==—



To : Mariann Quint, Armory
From : Jorg Vitell, GETG

Subject : Case SARD-10934

Please transfer the subject blaster weapon to the on-board armory of Aguila Proesti, CNV-211, with a copy of your previous report.

4 - FLETCHER

"—gwalintny p'terlchurli!"

"That's really very good, Fletcher," Otho Demaris assured him. "I think if you open those vowels just a little more — gwaawwleentny — you'll be speaking Gra like a native. As it is, I doubt there are many linguists in this sector who are as practiced as you. I don't know anyone who can match your speed, short of a native-speaker of Gra. I guess what I'm saying is that I've taught you all that I can teach you and if you think you need more, you're going to have to find a Gra to practice with."

"You know, Doc," Fletcher agreed, "the very same thought occurred to me the other day. I saw this posted over at the Dean's office," and he held out a photocopied sheet:



Galactic Ephemeris Task Group announces the availability of four (only) Academic berths aboard the GETG survey ship AGUILA PROESTI departing CGT 164444 ± 40, destination: classified, duration: 40 months ± 5.

Naval experience will be helpful but is not required. Candidates must be unattached, of good character, and eligible for Class 4 Security clearance.

Apply with resume no later than CGT 164380 to —

"What do you think, Doc?"

"You won't run across any Gra on that assignment, Fletcher," Demaris offered. "GETG is a bunch of gadflies, flitting hither and yon, making maps, cataloging stars and planets. They're just glorified data-entry clerks for the Encyclopedia. If you're really interested in that sort of thing, you should bid for Naval Intelligence. I think they'd find your language skills very, very useful indeed."

"Perhaps," Fletcher agreed. "But I find that 'destination: classified' attractively mysterious, don't you?"

Otho Demaris gazed off into space trying to remember whether he had ever seen such an announcement where the destination had been plainly spelled out. He was sure he had, but wouldn't have bet a large sum on it either way. *What could that mean, 'destination: classified'? And why would anyone with half a brain bid for such a pig-in-a-poke? Especially in these troubled times,* Otho thought, *he would want to know exactly where he was going and when he was coming back.* "At my age, Fletcher, 'mystery' has lost much of its charm. I much prefer predictable boredom to potentially unpredictable boredom. Each of us has only a certain number of moments allotted to us in life. Being able to predict the course of my existence moment-to-moment suits me. It allows me to maximize my enjoyment of each one that's left. 'Adventure' is for youngsters like you. If you find the mystery of the unknown attractive, by all means apply for this. But be prepared for a substantial share of boredom, punctuated by occasional heart-stopping panic, if you do. I'll stay right here, thank you."

Fletcher, his head cocked to one side, looked at his teacher and wondered how the two could be so different, yet get along so well. The unknown — boring? Fletcher's heart raced simply thinking about plunging into never-before-seen territory, being the first to set foot on a distant planet of an equally distant star, and if there were intelligent species, listening to them communicate, working out their language — this is what he was trained for — this was everything he had worked for his whole life. Maybe he, Fletcher, was the odd one. Now that he thought about it, few if any of the other scholars ever expressed interest in such things. Were they all perfectly content, as Doctor Demaris seemed, merely to teach, to pass along that which they had learned with never a thought to putting their knowledge to practical use? It seemed so, and now that Fletcher, at long last, addressed the question full in the face it seemed to him that there was but one answer. *Teach later; adventure now.*

"You may be right," Fletcher agreed, "but I have to find out for myself. Don't you think that actual field experience would make me a better teacher in the long run?" he asked, playing straight at the doctor's weak side.

"Well, of course —" Demaris reluctantly agreed, somewhat surprised himself at doing so.

"I'm glad you agree, Doctor," and Fletcher chortled inwardly to himself. "I would really feel like an ingrate running off like this if I did not have, at least, your reluctant blessing."

"Then you've decided to go ahead with it?" Demaris asked.

"Yes. Teaching can wait," Fletcher declared. "This is the sort of thing that must be done, as you say, by the young. While I have the chance I owe it to myself and those who follow me to be the best possible 'me' now in the hope that it will produce a better 'me' later."

"That's very noble, Fletcher," Demaris congratulated him. "Looked at in that light, I must admit that my blessing is hardly 'reluctant'. Go, my boy, and have your adventure while you can, and in my dotage I will be able to say that I was Fletcher Penta's last mentor before he launched his public career."

Fletcher could only smile.

ConNav
Galactic Ephemeris HQ
Relasta Commara
Pelause
CGT 164371

The logo for ConNav consists of the word "CON" in a stylized, red, blocky font above the word "NAV" in a similar style. The letters are outlined and have a slight 3D effect.

To : Fletcher Penta
From : GETG, Academic Division
Subject : Aguila Proesti

It gives me great pleasure to inform you that you have been chosen to accompany the Aguila Proesti on its next mission. Please signify your acceptance of this academic posting within four solar days. Your acceptance of this offer is your agreement to present yourself, ready for a 45-month assignment, at GEHQ on Pelause not later than 0800 CGT 164404.

This may be used as your travel voucher for one-way economy transport via scheduled carriers to Relasta Commara from your nearest port of embarkation.

Jorg Vitell
Registrar
Academic Division

—==+++==—

Date : 164371
To : Jorg Vitell
Academic Division
GEHQ
Pelause
From : Fletcher Penta
Subject : Aguila Proesti

Sir,

I accept the posting to the Aguila Proesti.

I have made arrangements to arrive in Relasta Commara about 164395, the latest date that I can arrive prior to 164404 as your letter instructs. All transport options have been examined and none will place me on Pelause later than nine days prior to 164404. In view of the notorious cost of lodging in Relasta Commara, I ask whether GETG can provide accommodations during that period. The alternative is that I may become vagrant because of poverty during that time.

Sincerely,
Fletcher Penta

—==+++==—

In a way, Fletcher thought, it might be educational to spend a few nights camped in one of the city's parks. His only real worry was that he might be arrested for vagrancy and be in jail on 164404, the day he had to report to GEHQ. On the other hand, he suspected that GETG swung a pretty big club in Relasta Commara. If they wanted him out of jail, he'd be out. If they wanted him in, he'd be in. Either way, he'd be alright, of that he was supremely confident. Besides, this was supposed to be an adventure, wasn't it?

Well, enough worrying. He had less than three weeks to put his affairs in order before leaving for Pelause. In that time that was left, he had to seriously prune his worldly possessions down to something like twenty kilos, the baggage limit he had heard (probably fifth-hand) for GETG academics.

At 31, Fletcher was your typical run-of-the-mill college student. His dorm room looked like every other dorm room you have ever seen, barring the few occupied by the rare hyper-organized business major, so Fletcher had a great deal of miscellany to dispose of, and his neighbors in the dorm were all too ready to assist him in

his house-cleaning, largely by appropriating those of his assets that would rate too far down on the scale of priorities to warrant a trip to who-knows-where.

—==++++==—

ConNav
Galactic Ephemeris HQ
Relasta Commara
Pelause
CGT 164376



To : Fletcher Penta
From : GETG, Academic Division
Subject : Accommodations

Dear Mr. Penta,

Let me assure you that Relasta Commara's reputation as regards lodging cost is very much exaggerated. Reasonably-priced accommodations near the city, if not within it, are available at all times during the year. I have enclosed a summary of several of the nearby commercial inns with prices and distances to GEHQ. All of these establishments have agreements with GEHQ regarding rates for those who are on Pelause on GEHQ business. That, of course, includes you. You will note that the rates are comparable to those in any major city of the Home Worlds.

Regardless, you may only have to fend for yourself until 164399 (just four days) at which time space will become available for you in our guest quarters. If this still seems to you to be excessive, please contact me directly and I will try to make other arrangements.

Please also note that, because of the small size of the Aguila Proesti, your personal baggage is limited to three stone of irreproducibles including the container.

Jorg Vitell
Registrar
Academic Division

Three stone! Not even twenty kilos! In a way, that makes the task even easier: some of the heavier items now seem far too

costly, and as they are removed, make way for several much lighter items.

As he packed, a seemingly endless succession of friends and acquaintances tramped through his room as if it were a rummage sale. *Fletcher, are you going to pack this picture?* one would ask. *No,* Fletcher would reply. *Then is it alright if I take it?* *Sure,* Fletcher agreed — *Fletcher, what about your desk?* another begged. *I'm going to store it,* Fletcher told her. *Oh —,* she muttered dejectedly. *Why?* —, Fletcher prompted. *Do you need a desk?* *Well, yeah, mine's not real sturdy and it's starting to fall apart,* she explained. *Well,* Fletcher offered, *why don't you store the desk for me, and if I ever need it, I'll ask for it back — Thanks, Fletcher.*

Fletcher knew he would never see the desk again, and really didn't care. Most of his possessions, he was slowly coming to realize, were part of a phase of his life that was rapidly drawing to a close. After this cruise, he would be a new person, a far different Fletcher than anyone had ever seen before, and he would have new views, new interests, and a completely new and different lifestyle, baggage and all.

With barely a day left before he would lift into orbit to begin his newest adventure, the chirping of the wall communicator woke him from a reverie partly induced by the necessity of writing the last few farewell notes to relatives he hadn't seen in years and might not see for years to come, if ever. "Yes," he answered.

"Mr. Penta? This is Joycelle from 'Anytime, Anywhere Travel'. I have some bad news regarding your flight: it's been postponed."

Well, thought Fletcher, *a postponement isn't the end of the world. Each day of postponement is one fewer day in the astronomically-priced lodgings Jorg Vitell had called 'reasonable' and 'comparable to many major cities —'.* "How long is the postponement, Joycelle?"

"Fourteen days," she informed him cheerily.

"Joycelle, that's not 'some bad news'," Fletcher told her, "that's a cancellation."

"Why, Mr. Penta, whatever do you mean?" Joycelle asked, truly shocked that he might no longer wish to travel. "Don't you want to go to Pelause?"

"Joycelle, I have to report to GEHQ on Pelause by 164404 or it makes no sense for me to go at all," he explained. "When will I get to Pelause on the new schedule?"

"Umm — Probably 164409," she quickly calculated.

"I'll check and get back to you," Fletcher told her.

Date : 164391
To : Jorg Vitell
Academic Division
GEHQ, Pelause
From : Fletcher Penta
Subject : Aguila Proesti

Sir,

I regret to inform you that, due to an involuntary cancellation of my travel arrangements, I will be unable to be in Relasta Commara until 164409.

Please let me know immediately whether I should plan to travel on this adjusted schedule or to cancel my flight altogether.

Sincerely,
Fletcher Penta

—==+++==—

Vitell signaled his secretary. "Sir?" she inquired.

"Contact GEHQ Ops," he instructed. "See if we have anything scheduled to pass near Teresa soon with orders that will put it on or near Pelause before 164404. If our Ops has nothing, have them contact Fleet Ops with the same request. Have them respond directly to me as soon as possible."

Several hours passed during which he busied himself with his normal load of trivia, arranging for this and that, consulting with assorted departments throughout GETG, sieving candidates for academic berths, and occasionally finding time to catch up on professional literature. Only other voice communication was (usually) exempt from interruption by voice communications. He put down the resume he was reading to answer the warble of his desk view-com. The face on the screen made him remark to himself that the Lieutenants got prettier as he got older.

This one was from Fleet Ops, judging by her uniform. "We have a patrol vessel in that area that is due to be rotated to Palamaus on 164402," she informed him. "We could re-route it with the proper authorization. May I ask what prompted your request in the first place, Commissioner Vitell?"

Vitell sighed. "One of our academics has just had his travel plans scrambled, no doubt because wartime conditions increase uncertainty in everything. He's pretty far out, and his travel options are very limited. He'll miss his flight unless we can get him some

alternate transport. I don't want the Navy to go very far out of their way to rescue him, but bear in mind that we cannot fill his berth at such a late date, and it means the loss of some potentially valuable research should we depart without him. Yes, I'm asking the Navy to swing by, pick him up, and transport him to Pelause before continuing on about their other business. Who would have to authorize that?"

"I just did," the Lieutenant assured him. "Have your staff send me all the details: who and where. We'll tell you the 'when'. All you have to do is make sure he's ready to go when our ship reaches Teresa."

—==++++==—

ConNav
Galactic Ephemeris HQ
Relasta Commara
Pelause
CGT 164393

The logo consists of the word "CON" stacked above "NAV". The letters are rendered in a stylized, blocky font with a red outline and a white fill. The "O" in "CON" is a simple circle, while the "A" in "NAV" has a distinctive shape with a pointed top.

To : Fletcher Penta
From : GETG, Academic Division
Subject : Accommodations

Dear Mr. Penta,

Please cancel your travel arrangements. You will be contacted by Rodina (CNV-688) on or about 164402, and you must be ready to leave with not more than one half-hour's notice. Rodina will provide transport to Pelause in time for you to join the crew of Aguila Proesti. Regards,

Jorg Vitell
Registrar
Academic Division

—==++++==—

Nine days. Fletcher didn't even bother to unpack, and lived a wilderness existence waiting for the days to slip away, which they did (as they always do), one by one. It was fortunate, he told himself, that he made an early night of it on 164401, for at 2 in the morning, in what would have been normal sleep-time for most people, the wall

communicator began chirping furiously. Fletcher was snap-awake in an instant. "Yes?" he responded.

"Mr. Penta?" Yes. "Ensign Aloise Aliria, sir. I am the duty transport officer for Rodina. Sir, I have orders to bring you aboard. Are you prepared to transport?"

"I'll need a few minutes," Fletcher answered.

"I'll stand-by," Ensign Aliria assured him.

Fletcher dashed next door to his nearest neighbor in the dorm and pounded on the door. The sleepy-eyed occupant looked at Fletcher uncomprehending. "Do you need a ride to the spaceport?" his neighbor asked.

"I don't think so. I think they're going to pull me aboard," Fletcher informed him breathlessly.

In moments, the whole dorm was awake, and people crowded into Fletcher's room to watch the operation. Fletcher brushed his teeth and splashed water into his face to get himself as awake as possible, said a few quick good-byes, and then: "Rodina, I'm ready for transport."

"Mr. Penta, do you have personalty?" Ensign Aliria asked.

"Yes, this duffel bag at my side —" he told her.

"Aye, aye, sir," Aliria confirmed. "Transporter lock — start transit —". The students all stood there gape-mouthed as Fletcher's body and duffel bag dissolved into a trillion trillion packetized energy fields and slowly dissipated into the air.

Aboard Rodina, the phenomenon reversed as a trillion trillion packetized energy fields slowly appeared and then coalesced into Fletcher Penta and his duffel. A breathless "Wow!" was all he could manage as the transporter deck materialized around him.

"Bridge from Transport: transit complete, transporter secure." Ensign Aliria locked the controls and picked up Fletcher's duffel. "Follow me, sir. I'll show you to your room."

As they walked down the corridor, Fletcher could feel a small wave of nausea as the inertial suppression fields kicked in, and he knew that they had just jumped into hyperspace. At the door to his room the Ensign asked: "Captain Erallerie wishes to know if you will join him for breakfast in the wardroom, Mr. Penta?"

Fletcher knew from his parents' stories that the phrase *'the captain wishes —'* is as close to a direct order a civilian aboard a Galactic Congress warship would ever get. "My compliments to the captain. I'll stow my gear and meet him in the wardroom. Where is the wardroom located on a frigate, Ensign?"

"Sir, our wardroom is 2-Starboard-50. Do you require an escort?" she asked.

"Thank you, Ensign, I'll find it," Fletcher declined her offer. Aloise Aliria nodded in his direction, turned and went on about her own business.

Some minutes later Fletcher entered 2-Starboard-50 and joined six bridge officers including the Captain at breakfast. Having had only three hours sleep during the past night, Fletcher was barely capable of thinking about breakfast, but he sat and ate anyway because it was expected.

"You must be quite important to the Navy, Mr. Penta, to rate this special pick-up," the Captain suggested to him. "What is it you do for us?"

"I'm afraid it's merely bitter circumstance that brings us together, Captain," Fletcher explained. "I have an academic berth on a GETG survey ship, and I have to report for duty on Pelause by 164404. I was left stranded by a last-minute cancellation of my flight. I suspect GETG must have done considerable bowing and scraping so as not to send the ship off with an empty bunk."

"Ah, I see," the Captain explained. "I was thrown off by your seeming familiarity with the ship. My ensign tells me you did not require an escort, merely the location of our dining facility. I presumed you were a civilian attached to the fleet."

"Both of my parents served with the Navy briefly," Fletcher told him, "and they're both still in the Merchant Fleet. I spent a lot of time aboard ships of one sort or another over the past thirty years." They all nodded as if in recognition of, if not 'one of their own', then 'one of their own's own'.

Twelve hours later, Rodina went into synchronous orbit above Pelause and Fletcher was transported straight into the heart of GEHQ.

5 - RELASTA COMMARA

The bridge doors slid wide and Irina Dzudek stepped inside accompanied by the first officer, Willi Gulassine. The duty ensign announced: "Captain on the bridge." The bridge crew snapped to attention.

"As you were," she instructed them. "Number One, make that a permanent order. Communications, put me on ship-wide."

"Ship-wide, aye," her communications tech confirmed.

"All hands, attention to orders," she spoke to the ship at large, and then she read from the paper in her hand: "'From Commandant, Naval Operations, to Captain Irina Dzudek. On receipt you will proceed to Aguila Proesti (CNV-211) at Pelause and assume command. Determine ship's readiness for travel and review crew personnel data. Await further orders.' Ship-wide off." The communications tech switched off shipwide-address.

"Computer, are the orders just read contained in your files?" she asked as if speaking to the walls.

"Yes, sir, they are," a vaguely mechanical voice responded.

"Voiceprint verification: I am Irina Dzudek, Captain, GETG, serial 1477632."

"Confirmed," the voice assured her. "Welcome aboard, Captain Dzudek. Captain's locks have been resequenced for your voice."

"Number One," she asked, turning to her first officer, "What is the state of the ship?"

"Sir, we are in all respects ready for space," Willi Gulassine assured her.

"Very well. Cast off," she commanded. "Quarter thrusters aft."

"Spacedock Two," the helmsman radioed to the dockmaster, "Aguila Proesti is departing." The helmsman confirmed "Mooring locks are zero. Thrusters back one-quarter, aye."

The ship backed away from its berth in spacedock. As it cleared the framework of SpaceDock Two, Dzudek leaned in toward the helmsman and ordered: "Starboard half back."

"Starboard thrusters are back one-half, aye," came the acknowledgment. The ship began a slow pan under the uneven thrusters, and Spacedock Two disappeared to port.

"Starboard quarter back," she ordered, "stand by reaction."

"Starboard thrusters are back one-quarter, aye," came the helmsman's acknowledgement. "Ready reaction."

"All stop," Dzudek ordered.

The helmsman pulled the power actuators all the way back. "Thrusters zero, aye." Aguila Proesti floated free of the spacedock, slowly rotating as it drifted away toward the planetary surface.

"Nav, time to re-entry," Dzudek queried.

Without lifting his eyes from the controls, the navigator informed her "Captain, re-entry in 1.4 hours."

"Number One, you have a quick crew here," she congratulated Willi Gulassine.

Willi Gulassine smiled. "Captain, we have a quick crew here."

"So," she remarked with a satisfied tone in her voice. "Number One, I'm issuing a standing order: whenever practical, Aguila Proesti will be docked tail-in. Helm, return us to our berth in spacedock, tail first."

"Aye, aye, sir — Aguila Proesti to SpacedockMain, stand by to retrieve ship." Using thrusters, the ship side-stepped to the barn doors and the dockmaster's tractor beams did the rest.

—==+++==—

Willi Gulassine was a Naval Academy graduate from the end of the era of peaceful exploration. He had seen action against Forton forces and had done several patrols on the Kett frontier working his way up through the ranks to his present situation. At age 55, he should have been looking to his next promotion from Commander to Captain and then to Wing Commander, but he was not. He was, instead, entirely content exactly where he was, second-in-command on a fast, heavily-instrumented, lightly-armed survey ship. The small crew of Aguila Proesti, only 87 hands including officers, meant that he could get to know each and every one of them thoroughly, an indispensable asset for a first officer.

The opposite was, unfortunately, also true: they would get to know him with uncomfortable familiarity, especially some of the females. Luckily, Aguila Proesti was not a warship and it was most unlikely he would ever have to order one of them into a life-threatening situation. Being a non-combatant certainly did have its benefits.

Then, too, the GEHQ policy of providing berths for a small contingent of 'academics' meant that his largely-academic crew would have constant cross-pollination by fresh thinking and new technology. It kept his crew sharp, awake, and alive, which (for the technically oriented) meant that they were kept happy. Happy crews, he knew, meant happy officers. If only the academics were a little more — formal? — regimented? — he couldn't quite find the right word, but he

knew that he would soon be getting a fresh batch of thirty-somethings who never seemed capable of acting older than half that.

Then there was Aguila Proesti. It wasn't heavily armed — the regular Navy types would call it 'unarmed' — but it was fast! 'AP' was the fourth-fastest ship in the fleet and the six fastest ships were all GETG. Even under reaction power alone it could outrun a naval vacuum torpedo, and when the hyperdrive engines came online —! AP could sustain $\text{D}1.6$ indefinitely, and had come within a rat's whisker of Gedacta's record $\text{D}1.7062$, missing it by less than 0.03D . Of course, all six of the GETG ships were equipped with the new experimental pumped-plasma drive. In another eight years (assuming they could work all the glitches out of the finicky, persnickety, unpredictable plasma pumps) every ship would have them and AP's speed advantage would be lost — for the time being. But for now, what a ship!

The comm-panel chirped at him: "Mr. Gulassine," the Captain's voice asked, "what does your schedule look like for the balance of the shift?"

"I'm at your service, Captain," Willi assured her.

"If you can guide me through the personnel files, I would appreciate it," Irina Dzudek begged. "My ready-room at your convenience."

"On my way, Captain."

—==+++==—

Hours later they were ready to wrap up the review of the crew's personnel files. "—and the newest is Ensign Tenai," Willi finished up. "Tenai came to us last year from the Academy. She's an Engineer with a great interest in high-energy reactions, so I gave her responsibility for drivecore monitoring. She has collected over the past four months enormous volumes of data on power flux in the core and has a program that will monitor the core reactions and — are you ready for this? — predict the anomalous power drops we've been seeing with the pumped-plasma drive. Watch this one. This kid is going places in the Navy.

"That's all of them. They're quite a crew. Captain Ballasteros, before he passed on, used to say he thought this was the best crew in the Navy. I have to agree. Eleven of your officers own 67 Galactic Congress patents, most of them in use right now on this ship."

"Impressive," Dzudek nodded. "Commander, thank you for your time. I didn't mean to keep you this long, but I'm sure you saved me several days' work this evening. Can I buy you dinner?"

He looked at the chronometer on the wall. "Sure. If we hurry, the crew's mess will still be open."

"Not the officer's mess?" Dzudek asked, surprised.

"Closed 20 minutes ago," Willi apologized. "It was Captain Ballasteros' policy that any officer, himself included, who missed mess call would have to fend for themselves. You can change that, of course —"

"No," Dzudek told him. "Let's hurry."

—==++++==—

At the propulsion console, a junior engineer watched the indicators and called out their readings: "Core drop in 12 seconds — 11 — 10 — 9 — 8 — 7 — 6 —"

"Here it comes!" another tech, who was watching a different set of instruments, shouted.

"—2 — 1 — 0 — plus 1 — 88.2% power drop detected 1.06 seconds post-prediction," the first announced.

"Well," Lya Tenai admitted to her Chief, sounding somewhat exasperated with herself, "it's not perfect — This is typical: I can generally call it within 1 second either way, so I always time to the predicted early drop, 1 second ahead. The mid-point prediction on this one was point-oh-six seconds early of actual. That's pretty good, but it's accidental — it does worse than that often." Clearly she wasn't happy with her own performance.

"Have you spoken with the Chief Engineers of the other vessels?" her Chief Engineer asked. "They might have some useful insights."

"No, it's still too sloppy for me to put my name on," Lya demurred.

"I think that's a mistake and I'm overruling you," the Chief Engineer told her. "I want you to package your test data and programs and put it onto the GETG library so the others can have the benefit of it."

"Yes, sir." She would have been happier with a spanking than the (to her, unjustified) admiration the Chief was obviously showing over work she, herself, considered shoddy and second-rate.

'Venda Alxzandr, Chief Engineer of Aguila Proesti, set up a conference call with the other five CEs whose ships had the pumped-plasma drive.

"I called you all together to let you know that one of my staff has a program that monitors various measurements in the drivecore and is pretty darned accurate at predicting these catastrophic power drops —" 'Venda announced.

"How good?" one of the CEs asked.

"She can usually predict onset in a 2-second window, with a minimum 10-second lead," 'Venda boasted.

"That's not 'pretty darned good'," another CE said with a clear note of surprise, "that's spectacular! How good is it at predicting duration?"

"It doesn't predict duration or severity — yet," 'Venda admitted. "We haven't found any indicators for duration and the indicators for severity are unreliable. I'm telling you this because I think with six crews looking at the problem, we may close on a solution faster. I've had Ensign Tenai ship the package to the GETG library. Any of you interested in looking at this with us can pull your own copy. I've also granted her authorship for the process. Any problems with that?"

"Not from me. She sounds as if she deserves it. Thanks, 'Venda. We'll let you know if we come up with anything."

—==++++==—

"Beats me, Willi," the ship's armorer opined. "Why would the Navy's Armory send just one blaster, and mark it 'hold for CO'?"

"I'll ask," Willi told him. "There's probably a simple explanation."

"And look at it," the armorer continued. "It looks like it's fifty years old — no controls, no indicators — no inventory markings."

Irina Dzudek was equally at a loss over the 'report' that arrived in her morning mail, especially the part that went "—held — pending your instructions —". It was obviously no longer being held, therefore Vitell must have issued instructions. She called Jorg Vitell.

"Good morning, Captain Dzudek," Jorg Vitell gushed as he recognized the source of the call. "Please accept my apologies. Believe me, you were next on my list of people-to-call, and you beat me to it.

"Since you're new to GETG, I haven't had the opportunity of consulting you as regards your policies toward your academics. Some of our survey ships' captains treat their academics as full members of their crew, up to and including issuing personal sidearms. Have you developed a policy on sidearms for your academics?"

"I, personally, have not," she admitted to Vitell. Turning to her FO she asked him "Number One, did Captain Ballasteros?"

"Yes, sir," Willi replied. "We required the academics to attempt qualification with all standard issue sidearms. Captain Ballasteros permitted academics to draw from the armory any single sidearm for which they had qualified."

"I will probably adopt the same policy, Jorg," Dzudek told Vitell. "Now, give me a little more information on this particular blaster."

"The background on the blaster I had them send you is as follows: it was constructed as a Junior High School science fair project —" He could hear her snorting with laughter in the background. "— about fifteen years ago by one Petr Alioth who will be accompanying you on your next trip. If Petr qualifies, I'm sure he would be delighted to carry a weapon of his own devising.

"Of course, he is a civilian, so you will have to recover the weapon before the end of the cruise. I hope that it will then be transferred to the GEHQ Museum of Science and Exploration. We are fortunate that Lin Angst, in his instructions to the Armory, used the word 'disposition' rather than 'disposal', otherwise transferring it out of Security Division's control would not have been an option.

"By the way, don't let him tinker with it. It's historically significant as-is. That's going to be my response to this angry memo from Angst which is next on my list of things-to-do. Speaking of which — Captain Dzudek, it's been delightful chatting, but I'm now losing ground to an ever-increasing pile of paper. Good luck."

—==+++==—

Traveling under these conditions isn't all that bad, Petr thought. Peace-time travel must be positively delightful. His shuttle had lifted from the planet's surface without incident, but he had to wait nearly three hours in orbit before his ship could link up with a convoy. The Gra had made armed escorts and convoys the only safe way to move from place to place across the entire Galactic Congress.

The route, also, had been selected to minimize the chance of interference by the enemy and so the trip was longer than originally planned. To accommodate these 'unavoidable scheduling difficulties' (and the sudden drop in passenger count), several radical and involuntary changes were made to his travel plans.

For one, the flight he originally selected was cancelled and he was placed on a later flight. "No," he had told them, "I need an earlier flight or I will be late for an appointment." "Oh," he was told, "*we're sorry, but that flight is full.*" "Cancel my ticket," he demanded. "I'm not going to Pelause only to find myself stranded, penniless and ticketless, parsecs from home." "*Cancel? Cancel? Just a moment — Yes, we can accommodate you on the earlier flight —*"

For another, the length of the trip was nearly a whole solar day longer, 50% longer, than the original peacetime schedule, and therefore the cost was greater, 50% greater, than usual. Had he been the one paying the bill, he would have been greatly cheated off, but he

wasn't. On the other hand, his ticket was for one-way passage. He might save enough in three years of diligent work on Pelause to get back home. Might.

Then, too, passenger-ship travel would certainly be more luxurious than this. Traveling on a freighter, one must expect to be treated like — well — like freight. Food was adequate. No one expects gourmet cooking from a robot chef, but it was miles ahead of college cafeteria fare, and that was prepared in the traditional manner.

At Pelause, his ship and one other detached from the convoy and Petr transferred his gear to the waiting shuttle for transport to the surface.

—==+++==—

Janet spent virtually all of her free time on-board looking out of the viewport, watching hyperspace roll by. She had never been off-planet before unless you consider 10,000 meters 'off-planet', and while she recognized the scene from vid-screen presentations she had seen, there was something oddly different about experiencing it in the first person. Different and captivating. She begrudged every moment away from it, whether for sleeping or eating, the only two functions that were really required aboard ship.

Most such voyages were done by one ship traveling alone, but the war had changed all that. Now ships traveled in convoys, accompanied by armed naval escort vessels. She could see from her viewport the light cruiser and two of the many fighters she knew must be close-by forming a protective shell around the ships of the convoy.

She really hated the Gra, now, and for no reason other than that they had cost her five whole days suddenly and without warning. Her 164401 flight had been cancelled and she had been switched to the 164396 flight with barely two days' notice. The time she thought she had left with her parents and friends evaporated before her very eyes. She had been left with no time to write to distant friends, not even to Tony, and she didn't know whether the regimen at GEHQ would allow her time to catch up with all the tasks yet unfinished. She had promised her mother she would write every day until departure, after which — It was quite likely, she reminded her mother, that personal communication would be prohibited once they were told their destination (if they were told), and almost certainly would be prohibited once they were *en route*. Such signals could be intercepted and traced.

Well, she would try to report early to GEHQ. She didn't know what she would do if they couldn't find dorm space for her. Relasta Commara was notorious for the high price of its hotel rooms. The cost of five days lodging would break her financially.

At Pelause, her ship and one other detached from the convoy and Janet transferred her gear to the waiting shuttle for transport to the surface. Her seatmate for the downtrip had last month's Journal of Physics and Chemistry open to *Impossible Landscapes* and was staring intently at the picture. Janet smiled. *Another 4.5 credits in my pocket*, she thought, then he noticed her looking over his shoulder.

"Would you like to have this," he asked her, offering the magazine.

"Thank you, no. I was just wondering whether you had figured it out yet," she offered as a conversational gambit.

"I've found one impossibility," her seatmate answered, "but this one, Janet Mar, likes to layer problem on problem. Every one I've missed, I've missed because I said 'Oh, of course' and stopped looking. The obvious solution is not always the correct solution when it comes to her 'Impossible Landscapes'."

"So —," Janet teased, "what impossibility did you find so far?"

"This sky looks like it's loaded with sulfur dioxide," he began, "yet the liquid lapping the foot of this granite cliff appears to be water, H₂O. The first rainfall will be tons — literally — of sulfuric acid pouring out of the sky. Is it possible that hasn't happened since this granite rock face was uplifted? I don't think so. It must have happened at least once before in the several million years it took that granite to form. Why isn't the rock bleached bone-white?"

"That's too simple an explanation, unfortunately. It has to be wrong."

"So, you're not going to enter this month?" she sounded disappointed. "You know, she gets a bonus for every incorrect answer submitted."

"Really?" he asked. "Are you with the Journal?"

"In a manner of speaking." She held out her hand. "Janet Mar."

He smiled widely, took her hand and kissed the tips of her fingers. "Delighted to meet you, Ms. Mar. Petr Alioth," he introduced himself. "I've admired these fanciful landscapes of yours for quite some time. What brings you to Pelause?"

"Business," she answered mysteriously.

"Well, then, tell me —" Petr begged. "Did I guess correctly?"

"You'll have to wait for an answer: the deadline for the contest is tomorrow and the next Journal will be available the day after. Unless, of course, you can wheedle it out of me over dinner —" she suggested with a smile.

"I'm an expert at wheedling," he told her. "Shall we start tonight?"

"Alright," she agreed, "how shall I contact you?"

"That's a problem. I had better contact you. I don't yet know where I'm staying," Petr admitted.

"That certainly is a problem. I don't yet know where I'm staying either — until GEHQ tells me," Janet informed him.

"Ah, well, that's who's giving me orders these days, too," Petr countered. "Are you going to be employed here?"

She shook her head. "Shipping out with a survey."

"Aguila Proesti?" Petr suggested.

Her face brightened. "How did you —? You're going, too! I should have known! Well, that will make it easy for us to find each other, anyway," and they shared a good laugh over the coincidence of it all. Then they shared surface transport to GEHQ where they signed in, stowed their belongings in the recruit barracks and started getting acclimated to military life.

"Alright," she said over dinner, "I can see I'm not going to make any money on you this issue. I'll tell you. You're right. The granite could not exist in that state given the conditions of the atmosphere, but rain is not required: the sea cannot be water — it must be sulphuric acid. The rock would be converted to metallic salts as fast as it formed — calcium and magnesium sulfides, sulfites, and sulfates. If any of it ever managed to break the surface, the first rain would wash it into the sea.

"Not all of my landscapes are problems-hiding-problems, but those are the ones that pay the best: four-and-a-half credits per incorrect answer submitted up to 600, 1200 credits per plate."

"Have you ever max'ed out?" Petr asked.

She smiled an impish smile. "Almost every issue," she admitted. "Want to see the next one?"

"Of course!" Petr agreed.

She showed him her alpine meadow. "This is too easy," he told her. "Pentafolium grows only in a carbon monoxide atmosphere. This bovis munching grass over here is an oxygen-breather. It should be lying down — dead."

"That was fast," she admitted.

"Yes, but was it right?" Petr prodded.

Janet smiled her impish smile again. "Ah, for that, you'll have to wait until next month."

6 - ORIENTATION

"For the record — we are at war. For the record — you are no longer civilians. Neither are you strictly military. Nonetheless, you are subject to the Articles of War, no less than any soldier. Your first seminar this morning will be a high-level overview of the Articles of War. I want you all to pay very strict attention to your mentor. Very many things that would get you an overnight stay in the brig during normal times will, in these abnormal times, get you executed instead." A few of them exchanged nervous glances. Sergeant-Major Amar continued:

"This afternoon, you will be introduced to NavNet, and your personal netcodes will be authorized to NavNet. Say good-bye to expensive network traffic bills — the Navy's picking up the tab on this one. At the same time, you should be aware that none of your net-traffic will be completely private from now on. Every message sent is subject to review and censorship.

"Tomorrow morning, we will all visit the armory where you will be instructed in weapons-safety and you will have a chance to fire several types of weapons at our range. Your commanding officer has indicated that you will be permitted to draw a personal side-arm from ship's armory if you qualify at the range. You may spend as much time at the range as you wish, because that is your last assignment before the week-end.

"Some friendly advice — the better condition you're in when the week-end's over, the more you'll like the following week. It's going to be marginally strenuous. Early in the week — I'm not sure which day, yet — you will be shuttled into orbit for your first visit aboard *Aguila Proesti*. This will follow a short seminar in which you will be introduced to military protocol. Remember that even a survey ship like *Aguila Proesti* is still a military vessel. You are expected to behave with proper decorum while you wear a Navy uniform.

"Any questions?" Sergeant-Major Amar finished.

There were none, and the Sergeant-Major escorted the four academics to the mess hall for refreshments before they wandered off to their first orientation class.

—==+++==—

CGT *****

Dearest Tony,

Forgive me for being so forgetful. I asked mother to dash off a quick note to you to explain the events of recent days. I hope she has gotten word to you, else this note will come as quite a shock.

Bitter circumstance made it impossible for me to write this while I was home, and my life recently has been so busy and activity-loaded that this is truly the first opportunity I've had to sit and write anything coherent (other than things I have been ordered to write).

As you can see from the dateline above, I'm on *****. I will be shipping within a ***** on the *** vessel *****. It was only by the barest of margins that I find myself outbound to who-knows-where not to return for perhaps ***** instead of joining you at the Naval Academy. I have asked the Academy to defer my admission date, but have not heard back from them. Perhaps when I return, a little more experienced, I will be able to follow the path mother worked so hard to clear for me, and catch up to my dearest Tony.

I do hope you can forgive me for throwing a shoe into all your plans. In view of the long separation we are about to endure I won't blame you in the slightest if you re-examine our relationship and decide to make some changes yourself.

Regardless, I shall always hold your memory dearest and consider you my first friend. No matter how far apart our hands, our hearts will always be in reach.

Love, always,

Janet

— == + + + == —

Their schedule was very light. 'Fitting ship' was still an inexact enough science that GETG always allowed three days leeway before the start of an expedition. Irina Dzudek was making them wish they had doubled that. When she discovered that Aguila Proesti's naval vacuum torpedo launchers had been removed to accommodate several optical telescopes, she had the telescopes removed to another part of the ship so that the tubes could be re-installed in their proper place. Then, the parts for the tubes could not be located. They had been off-loaded and sent to the surface. She requisitioned replacement tubes. The requisition was turned down: not enough time was left before departure to install them properly. Her request for a later departure date was likewise turned down. A last-minute shipment of this-and-that could not be taken on board because the space it was assigned to was now occupied by five large telescopes. Loading was delayed further while the telescopes were restored to their original location. That, of course had to wait on its re-renovation to its original configuration.

When the four academics finally saw their ship for the first time, they had been through a week of lectures on law, history, service traditions, military decorum, weapons safety, and organizational considerations, and had spent what seemed like days being poked and prodded by various and sundry medical and psychological technicians, more days developing the feather-touch necessary to properly operate the Navy's several forms of directed-energy weapons, and still more days doing push-ups, sit-ups, pull-ups, toe-touches, knee-bends, and other maneuvers too strange to have names. They had each been interviewed at least twice, some three times, by Naval Security in what they were sure were 'final exams'.

They had been told that Aguila Proesti was a small ship, but knowing that it displaces 310,000 tons and is 470 meters in length prepared none of them for the reality of approaching the largest ship they had ever seen. Interstellar travel by civilians was still rare enough that passenger ships tended to be quite small, relatively speaking, and cargo vessels tended to be little more than tugs: an engine, places for the crew to eat, sleep, and work, and many places where external cargo canisters could be attached. Only the most valuable cargo was ever carried within the ship itself. Aguila Proesti, therefore, took their breath away. It was large enough in every dimension to enclose any of the ships that had brought them to Pelause, and it was a 'small ship'.

The two-stage trip from the surface took them first to Spacedock Two where a second shuttle from Aguila Proesti met them for the final leg of the journey. The aft shuttle bay was adequate to handle three shuttles and theirs slipped into the last open slot. Forward of the cavernous space, shipfitters' shadows were thrown,

magnified, onto the opposite wall by the flickering light of their welding arcs as they reconstructed cradles for telescopes. Wisps of burning something floated through the air to sting their noses as they were hurried out of the confusion of work-in-progress and into the more civilized main body of the ship.

Each of them had been assigned a personal escort, volunteers from the ship's crew, to shadow them, to answer their questions, to show them to their new quarters, instruct them in the mechanics of the various devices they would eventually be called upon to use. They each got a superb, if not exactly equal, education.

Looking over their biographies, Lya Tenai had begged, had pleaded, to escort Petr Alioth. No, her work on the drives, she was told, took precedence over everything. She settled for an early introduction.

For his part, Petr could barely wait to actually lay his hands on a hyperdrive. He knew the basic principles, of course, but building one was out of the question without some very expensive and hard-to-come-by hardware. For one thing, you had to be able to contain anti-matter in sufficient quantities, and you had to be able to keep it from spontaneously mixing with ordinary matter. And the technology behind the matter-anti-matter-valves (MAMVs) was a secret even the Galactic Congress had been unable to pry loose from Jepperson Laboratories. All the Navy knew was that the things worked, and worked flawlessly. Petr had heard that Aguila Proesti had a hot-shot plasma-engineer fresh out of the Academy who was doing some very leading-edge stuff with the ship's largely-experimental hardware. He expected he would meet him, if not on this orientation trip, then soon after they all moved aboard.

So it came as something of a pleasant surprise that he found his yeoman-escort leading him in the general direction of Engineering.

"I understand you have one of the fleet's best plasma guys in your engineering department," he offered to his escort.

"Who? Ensign Tenai?" the escort asked. "Yes, I think Tenai may be near the top in the fleet — Placed first among the Academy's Engineering grads that year, but I would hardly call Tenai a 'plasma guy'."

"Oh, really?" Petr asked. "Why not?"

"You should judge for yourself," his escort suggested, turning into the Engineering Control Room. "Ensign Tenai," he called, "I have Petr Alioth here to meet you as you instructed."

Lya Tenai turned in time to see the surprise on Petr's face turn quickly to a smile as he erased the term 'plasma guy' from his working memory. Lya Tenai was no guy, at least like no guy he had ever seen. She reached her hand out to him. "Mr. Alioth —".

"—Petr —" he corrected her.

"—Petr, then, welcome aboard Aguila Proesti. I've been looking forward to meeting you ever since I read your biographical data. We seem to have a common interest in high-energy phenomena. Do you have time for a tour of the drive-core?"

"Ensign Tenai —" he began.

"—Lya —" she corrected him.

"—Lya, that has been at the top of my list since high school. Take me to your engines," Petr begged.

Lya Tenai turned to Petr's escort. "Yeoman, we'll be about two hours. Return then for your charge. If we're not here when you return, we will be in The Cave."

"Aye, aye, sir," and the yeoman left to pursue other interests for this unscheduled and very welcome recess.

"Is there anything in particular you'd like to see first, Petr?" she asked him.

"I want to see it all —" he said.

"Very well, then, the Grand Tour," she agreed. And it was.

—==++++==—

As they walked away from the matter-antimatter mixer back toward the main body of the ship, Lya explained to Petr how she stumbled across a method to predict the drive failures with the new pumped-plasma drives: "—and it appeared to me that, based on the strength of the initial field, we ought to be able to use an Aliffian transform to predict the sometimes catastrophic collapse of the control field, and that it had to occur not earlier than about nine-and-a-fraction seconds after onset. Given the typical ranges we use for field density, we should probably see onset not later than eleven or twelve seconds after that initial, telltale wobble in the anti-matter stream. I'm absolutely positive that the new sub-micro Jepperson valves are faulty, but I can't prove it." The door of The Cave, the off-duty restaurant and lounge, parted before them and they entered. "If we knew what was inside one, I'd be miles ahead in knowing the cause. As it is, I suppose we're lucky that I stumbled across the causality link — I'm lucky, that is: I have authorship for the first description — that's a jump in grade for me. If I can find the fix, I'm sure to make assistant-chief before the cruise is complete. If I make assistant-chief on my first cruise, you're looking at the Academy's next adjunct professor." They sat at a small table and ordered drinks.

"You'd like that?" Petr asked.

"Engineering is my life," she gushed, "making the exploration of the Galaxy possible — Would I like to be remembered for training the best of the best? Who wouldn't? But, I want to hear something

about you. You've been very adeptly pumping me for my views all afternoon. Let's hear your side now."

"Well, there's not much to tell," Petr began. "My life-to-date has been a series of institutions of higher learning, one after the other, each to a greater or lesser extent pushing me toward this spot from which, like you, I hope to get my next 'jump in grade' — my doctorate."

"How will this cruise get you your doctorate?" she asked.

"Data," he began to explain. "My thesis was rejected as 'too speculative': that there exist in high-vacuum space attenuated pockets of true anti-matter, and that the probable cause of the anti-matter is the extreme vacuum itself —"

"—and you're hoping to see some really high-vacuum on this trip and measure for the presence of anti-matter," Lya finished for him.

"Right," Petr leaned forward, amazed that someone else could 'get it' so fast. "If my thesis is correct, the depth of the vacuum ought to have some positive correlation to the perceived aggregate of the local anti-matter density. If not, not, and I'll be forever disgraced and will probably try to sign on with GETG and never go back." He smiled and she smiled back.

"You know, the vacuum gets deepest inter-stellar," Lya explained. "The problem with that is that we're usually in hyperspace. The rules in hyperspace are entirely different. The reason you found no data to back up your research is that it's next to impossible, unless that's your primary mission, to monitor real space from hyperspace. I hope you won't be disappointed, but please don't bet your career on whether or not you can obtain your observational data. I don't think you're going to get any."

"This was a gamble from the start," he agreed. "There was always the chance that I wouldn't even get near high-vacuum space. If I get even one observation, that will be far better than what I have now, which is nothing, and if I get no observations I'll be no worse off. I was hoping the Aguila Proesti's hot-shot plasma-jockey might help me set up some equipment to measure some deep-vacuum high-energy phenomena. What do you think?"

"I think our plasma-jockey would be pleased to trade her expertise in your area for your insights into hers," Lya offered.

"Deal. What expertise are you talking about?" Petr countered.

"I'm not sure, myself," Lya offered, "but Commander Gulassine has been hinting that you are some kind of wizard of high-end phenoms. Captain doesn't want him putting out too much detail, but apparently you have quite a reputation in the Navy."

"My reputation with the Navy is all negative," Petr admitted. "I almost didn't get this posting because of my reputation with the Navy."

"Yet, here you are, a man-of-mystery," Lya countered. "Tell me how one gets a negative reputation with the Navy, and a posting aboard one of its ships."

"It was probably the naval vacuum torpedo," Petr suggested, "if it wasn't the blaster. I almost went to jail for an extended tour while I was in high school. My lab partner and I built a small naval vacuum torpedo. It worked — uh — very well. The Navy was very agitated —"

"I'll bet they were," Lya offered with an astonished look. "That's Most Secret technology. I'm a senior engineering officer and even I don't have access to the kind of information that would allow me to do that. How small is 'small'?"

"Eight-tenths of a gram," Petr smirked.

"Oh!" she gasped. "You could carry a hundred of those in your pocket! And you got off?"

"Uh-huh. The jury reduced Felony Discharge of Artillery to Misdemeanor Possession of Contraband, sentenced to house arrest and probation," Petr gloated. "I'm sure the Navy wouldn't have been nearly as cross if they hadn't had to step on me just three years prior — I built a blaster for the junior high Science Fair. I never had the nerve to fire it, so I'm not 100% sure it worked — 95%, maybe, because I had to machine some of my own parts — wave-drivers are hard to come by on the open market —"

"I'll say. How did you even know what a wave-driver looked like?" Lya asked.

"I didn't, actually," Petr admitted. "I knew the basis for its operation, so I knew what it had to do. I guess you could say I re-invented the wave-driver from operating specs. Anyway, I was going to exhibit it covers-off so that the parts could be seen. I was really proud of being able to reconstruct it, as it were, from first principles. I should have test-fired it. Years later, and it still bothers me not knowing whether it worked or not."

Petr's yeoman entered The Cave and made straight for them. "Time's up," Lya opined. "Petr, I'm looking forward to this cruise. You and I are going to make each others' careers, I feel it in my bones." She scribbled on a paper notepad and tore off the sheet for him. "I don't yet know when we shove off. If it's going to be a few more days, it might be possible for me to get a head start on your equipment. This is my NavNet address. Let me know what you need."

"Thanks, Lya. This is going to be the most worth-while trip I will have ever taken. I feel that in my bones." She extended her hand

in farewell, and Petr took it in his and kissed her fingertips then turned and left.

As he disappeared from sight she looked at her hand, turning it over and over, staring at it as if it were transparent and she couldn't understand why that might be so. In the end, she gulped the last of her drink and left The Cave, headed for her room.

7 - VOIDWARD

Lya Tenai met the arriving shuttle so that she could give the news to Petr in person. The four academics shouldered their duffels and stepped out into the shuttlebay. Lya gave Petr a 'thumbs up' when she saw him in the portal and Petr smiled in return, sure now that she had been able to finish.

"Ladies and gentlemen," the yeoman addressed them, "you all know where your quarters are. Please go there immediately, and stow your personalty securely. Captain Dzudek intends to depart as soon as all stations report ready. Please follow me." A hand shot up. "Question. Yes?"

"Are we to stay in quarters during departure, or can we watch it?"

"You will have a very nice view of departure from The Cave. Do you all know where that is?" the yeoman asked.

"I know where it is," Petr volunteered, "and I'll take them with me when I go there." The yeoman turned and led them off toward the crew's quarters.

'Stowing' amounted to little more than putting their duffels into cabinets in their rooms. The four academics, Janet, Petr, Emmon Mar (no relation to Janet), and Fletcher Penta chatted as Petr led them through the corridors to 4-Forward, The Cave. "We're closed until stand-down," the yeoman-warder told them as they entered.

"We were told we could watch departure from your viewports," Petr pleaded.

"As long as you don't need anything to eat or drink. Replicators are off-line to conserve power. Are you our new academics? Welcome aboard Aguila Proesti," the bartender greeted them.

Fletcher Penta, who knew his way around a starship, tapped the wall communicator: "Echo ship-to-shore here."

They sat and made small talk and listened to the back-and-forth between Spacedock Two and the ship's bridge, then:

"Spacedock Two, Aguila Proesti is departing." It was probably AP's helmsman notifying SpaceDock of their imminent action.

"Aguila Proesti, mooring locks are zero. Fair winds, calm seas, fare well," the Dockmaster offered the standard departure-wish for sailors, especially those who sailed the vacuum. "Aguila Proesti cleared for departure."

"Thrusters ahead one-quarter."

From The Cave, they watched the delicate latticework of Spacedock Two slip away to the sides as Aguila Proesti carefully maneuvered clear of its enclosing cocoon of titanium.

"Thrusters stop. Two percent reaction." Spacedock began to fall far behind them. "Navigation, execute pre-set orders —" and after that, there was nothing more on ship-to-shore. They all waited, breathless, for the jump to hyperspace and it took them all by surprise anyway as they knew it would — no warning, just a kaleidoscope of radiation phenomena exploding at them from somewhere ahead.

From the wall communicator a boatswain's whistle sounded, the standard prelude to an announcement: "All hands, this is the Captain speaking. Attention to orders: 'From Galactic Ephemeris Task Group HQ to Commanding Officer Aguila Proesti (CNV-211): proceed to Arm 3 with all due speed and perform stage-1 map-and-catalog as covered by GETG Operations Manual chapter twelve. Subspace communications restrictions continue until lifted by HQ General Order. Mission duration is at your discretion through month-42 at which time you will suspend operations and return.' Orders end. There will be a briefing for all interested hands in the forward shuttlebay in one hour. The briefing record will be available later for those who were unable to attend. Off-ship message traffic must have the approval of a bridge officer. Ship-wide off."

Emmon Mar whistled. "Arm 3! Completely new territory. We may be the first GETG ship to make the passage. Do you know what I hear is between Arm 1 and Arm 3?" he asked rhetorically. They each looked at him as if asking *What?* "Nothing," he informed them. "Absolutely nothing. Between Arm 1 and Arm 2 there's every kind of imaginable space debris: dust, rock, gas, strings, you-name-it. But if you go the other way and cross from Arm 1 to Arm 3 you find nothing. No gas, no dust, no rock, nothing. It's the emptiest kind of space anyone knows of. Once you leave the general vicinity of Arm 1, you're in deep-vacuum until you arrive in the general vicinity of Arm 3."

Petr's eyes were alight. "I bet we'll find something unexpected in the inter-arm gulf," he confidently offered. Now all heads swiveled toward him — *What?* they seemed to ask. "Anti-matter, not thick pockets, just thin veils of the stuff, and we'll find more of it where the vacuum is deepest."

"Not possible," Fletcher asserted. "We would have observational evidence of something there, even if it was anti-material."

"Not at all," Petr explained. "What evidence we have is mostly photonic, and photons passing through a veil of anti-matter would be attracted to and annihilated by anti-photons. They'd just disappear, and the energy of annihilation would be lost in the

background and would appear to be simply a local field-effect. We would never even know that photons had been traveling our way."

"But," Fletcher objected, "wouldn't the background appear dimmer because of the missing photons?"

"Dimmer than what?" Petr demanded. "Remember, these are still members of the local group. We're not talking about something in an external galaxy where we would have certain tell-tale information to give us a good general distance measurement. And we're talking about an effect probably measured in parts-per-trillion. The chances that someone might notice it at all are exceedingly small. What's more, the photon-antiphoton annihilations will produce some secondary effects, x-rays and the like, that might further mask the difference. Notice it? You would have to know exactly what you were looking for and you would have to look in exactly the right place with exactly calibrated instruments. Otherwise, not a chance."

"Well," Fletcher said, "my specialty is Linguistics, not Physics. I'll leave the esoteric stuff to the scientific types and just take your word on this one."

"What difference does it make if there's anti-matter in deep vacuum?" Emmon asked.

"Well," Petr began, "for one thing, anti-matter is very expensive stuff, and it gets used up and has to be replaced. It would be nice to find an 'anti-matter farm' where it grows wild. If deep vacuum turns out to be an anti-matter farm, you'd like to know that, wouldn't you?"

"Yes, I suppose so," Emmon agreed.

"But there's a far more important reason for looking for anti-matter in deep vacuum," Petr continued.

"What's that?" Janet asked.

"Simply that I've bet my whole scientific career on its existence. If it doesn't exist, I'm cooked," Petr explained with a wry smile.

"Ah," Emmon remarked understandingly, and looked away off into hyperspace.

—==++++==—

A few of the crew were on sleep-rotation, several others were unable to leave their shift stations, but it appeared that the rest, about thirty, were here in the forward shuttlebay for the Captain's mission briefing.

The whole room stood as the Captain entered. "As you were," she instructed, and they retook their seats as Irina Dzudek moved to the podium at the front.

"Operational orders, as you know, are typically curt and leave a great deal unsaid," she began. "This is done deliberately so that the CO has maximum latitude to carry out the mission. Sometimes. This time, the orders leave a great deal unsaid because there is little of a factual nature to say about Arm 3. We are in transit at D1.6 to the general vicinity of Arm 3, our trailing neighbor on that Great Wheel we call the Galaxy. We are heading for a spot well out of the plane of rotation. From there we will have a plate view of the arm. If this gives a good enough view of Arm 3 to allow us to construct a 3-D computer model of the systems within, we will immediately begin the survey. Otherwise, we plan to move along the arm to get a third perspective. Stellar Cartography will determine when we have the data we need. The survey will proceed as follows:

1. construct an accurate 3-dimensional model.
2. Stellar Cartography will pick the point nearest the arm-end at which to begin the survey. This will be the point beyond which the population of older stars becomes so thin that interstellar travel time becomes a concern.
3. we will survey systems whose star is over 3 billion years old, concentrating in particular on planets that might harbor recognizable life forms, cataloging as we go.
4. at the end of 42 months, we will discontinue operations and return.

"Since we will not be spending more than a few days on each system, I have hopes that we can cover the 400 systems most likely to support species like ours, paving the way for the next phase.

"Any questions?" A hand went up. "Yes."

"How long a jump is it to our first layover?"

She glanced at her Chief Navigator who held up two fingers on each hand. "We expect to be in transit approximately twenty-two days before we shift back to real space." Another hand. "Yes."

"What if we have another power-drop?"

"The estimate of twenty-two days presumes that we will not have any serious delays due to random power outages," the Captain answered. "Each such, of course, will lengthen our passage." Another hand. "Yes."

"Sir, some of us have been with GETG for a long time and have yet to be picked for a landing party. Will you be rotating surface duty?"

Dzudek sighed. This was the one question every Captain could expect to get from every crew before every mission — someone *always* asks, and the answer is always the same. She delivered it: "Every surface excursion is potentially hazardous duty. As such, it

falls to the bridge officers to make the determination on an individual basis who will go and who will stay, and that is done on the basis of our estimate of mission potential. I would like to see as many of the crew as possible have landing-party experience, but I will not promise anything like 'everyone will get a trip to the surface', if that's what you're asking."

She looked over their faces one last time. "If there are no further questions — I want to take this opportunity to present our academics for this mission: Petr Alioth, Emmon Mar, Janet Mar, and Fletcher Penta. This is your chance to collect some fresh insights from people who have come to us directly from some of the finest institutions of higher learning in the Home Worlds. Pump 'em dry." She got a laugh for that one. "Ship's company, dismissed. Would the academics please stay a few moments after everyone leaves?"

As the crew filed out, the four clustered around Irina Dzudek and Willi Gulassine to hear what the Captain had to say.

"I haven't had the chance yet to welcome you aboard *Aguila Proesti*, and things have not settled down enough for me to have the luxury of entertaining you for dinner, but I expect we will do so soon. We will be twenty-two days in transit before our first scheduled stop, so you will all have plenty of time to familiarize yourselves with the ship. That's all I have to say at this time. Thank you all for showing this interest in the ship's business. I will see you all again during the week. Janet Mar and Petr Alioth, please see me later in my ready room."

—==+++==—


Janet sat across the desk from the captain.

"I'm not sure I understand what I'm seeing here, Janet," the Captain started.. "It looks like you turned down an appointment to the Academy in order to take this cruise on the *Aguila Proesti*."

"I hope I haven't turned it down permanently, Captain," Janet replied. "I applied to both the Academy for admission and to GETG for a berth on this cruise. GETG came through first, even though I had applied to them much later than to the Academy, so I took it. At that point, I was losing confidence that the Academy would grant the appointment and figured that a solid offer from GETG was better than a possible offer from the Naval Academy. A few days after accepting this posting, I was accepted to the Academy. I've asked them for a deferred admission, but I haven't heard yea or nay yet."

"Then you haven't seen this?" Irina Dzudek handed her a letter. It said:

ConNav
The Naval Academy
Palamaus
Piraeus
CGT 164405

The logo for ConNav (The Naval Academy) features the word "CON" in a stylized, red, outlined font above the word "NAV" in a similar style. The letters are bold and blocky.

To : Janet Mar
From : Admissions

Dear Ms. Mar,

Congratulations on your posting to the Aguila Proesti, and thank you for your kind note that will allow us to select another deserving candidate in your place. Academy policy does not permit us to defer admissions beyond the start of the term for which they are issued. This office will, however, be pleased to entertain a revised application on your return.

By copy of this to Captain Irina Dzudek of Aguila Proesti we are requesting that Capt. Dzudek render all assistance in the completion of that application. Again, the Academy's warmest congratulations.

Maj. Verna Kooistra
Admissions

copy: Dzudek, GETG/Aguila Proesti, CNV-211

"This is news — welcome news — to me," Janet smiled. "I cancelled my mail-forwarding order effective 164403 because I didn't think I'd be in a position to do anything with it after that. Well — what happens now?"

"Now we go to Arm 3. You study alien life-forms, if any are found, and 3-and-a-half years from now, you'll have a very attractive resume to attach to your revised application, and the Navy will have a potential Science Officer well on her way to a staff position," Dzudek outlined the plan. "Janet, I'm very pleased to have on my crew someone who could have been at the Naval Academy except for our lucky break. Welcome aboard Aguila Proesti.

"This letter will go into your personnel jacket. We'll talk more about this later, and on the return trip, at the end of the cruise, we'll put together the most compelling admission application the Naval Academy has ever seen."

"Thank you, Captain."

"Have you seen Petr Alioth?" Dzudek asked.

"He's outside, waiting for me to finish," Janet told her.

"Send him in as you leave," Dzudek ordered.

"Sir, yes, sir."

She'll do, Dzudek thought.

—==+++==—

Petr slid into his chair across from Irina Dzudek. "Is everything alright, Captain?"

"I think so, Petr," she began. "I just wanted to have a little chat because of something I saw in your biography." Petr winced. Captain Dzudek opened a file and made believe she was reading from it. "It says here that you once constructed a naval vacuum torpedo. Is that true?"

"Yes, it is," Petr hurriedly explained, "but you don't have to worry about anything like that happening aboard your ship, Captain. I gave up such pursuits long ago."

She looked straight into his eyes, locking them. "What a shame," she told him.

"Shame?" he responded, unable to tear his eyes from hers.

"Yes," Dzudek explained. "We're armed only with shipboard blasters. The VT launchers were removed to make room for other equipment. Launchers and VTs were shipped to the surface before departure. After all my years aboard warships, I'm feeling a little — exposed — without the punch of a bank of VTs.

"I saw your background and thought '*Wouldn't it be good if we could build our own supply of VTs —*'. That's why it's a shame you can't do that anymore."

"I didn't say I couldn't —" Petr retorted.

"Are you saying you still can?" Dzudek probed.

"I know how," Petr admitted. "The kind of material required is unusually hard-to-come-by for civilians. With the proper tools, and the resources of the ship —"

She tapped a button on her desk console. The face of 'Venda Alxandr appeared. "Engineering."

"Venda, can you put together a naval vacuum torpedo?" she asked and Petr heard the question.

"No, sir, I can't," 'Venda admitted.

"Why not?" Dzudek pressed.

"I don't know the details of construction, Captain. That's Confraternity Top Secret." She knew that before she asked.

"I have someone here who claims to be able to do it," she told her Chief Engineer. "I'm sending Petr Alioth down to talk to you."

Learn what you can. Give him what he needs." She clicked off. "Petr, if you can deliver on this, I will be in your debt. By the way, what was the yield on your VT?"

"Equivalent to fourteen grams of nitroglycerine, estimated."

"That's not much," Dzudek scoffed.

"The whole device only massed eight-tenths of a gram," Petr defended. "That's a seventeen-to-one yield. I was quite pleased. Fleet Security wanted me sealed up in concrete. If you got the same ratio out of a standard-issue VT, you'd deliver 7,000 kilo-equivalents on the target. That's enough to level a city the size of Relasta Commara."

"See what you and 'Venda can put together," she instructed. "Let me know how it turns out.

"Now," she continued, "I understand that during orientation you qualified with the hand-blaster among others."

"Yes, sir."

"Do you intend to draw one from armory?" Dzudek asked.

"I'm trying to decide whether I would be able to refrain from disassembling any weapon I might draw from armory," Petr admitted. "I imagine you might think poorly of me if I turned a box of parts back in to your armorer at the end of the cruise."

"Quite so," Dzudek agreed. "Perhaps, then, you ought to have a weapon whose insides are no mystery to you." She drew his blaster from her desk drawer and placed it on the table before him. "—and you are specifically ordered not to tamper with this device which, I am told, is historically significant in its present state."

Petr's whole face was smiling as he clipped it to his waist.

This is going to be a very educational experience, she thought as Petr exited her office. Seven thousand kilos of nitroglycerine would be enough, she was sure, to blow through Piraeus' shields, and damn little got through those. A fast ship with a knockout punch like a cruiser would be an enemy's worst nightmare brought to life.

A hawk among pigeons.

—==++++==—

"SQUEEEEEEEEEEEEEEEEEEE! nine — eight —"

"Emergency stand-down." Quickly, the ship's speed dropped to sub-light as the MAMVs shut down and locked. One-by-one the plasma pumps went offline. "3 — 2 — 1 — 0 — plus 1 — plus 2 — plus 3 — 56% power fall-off detected 3.55 seconds post."

"Recycle the pumps. Unlock MAMVs. Flow one-tenth percent. Restart all systems."

"Ready."

"Flow twenty percent —"

"All systems nominal."

"Full flow." The Assistant Chief Engineer spoke to his wall communicator: "Bridge from Engineering: full power restored. You may resume hyperdrive."

They had been thirteen days in transit. Mid-way through day twenty it happened again. On day twenty-two, the ship stood down from hyperdrive and began mapping Arm 3 into three dimensions.

8 - SURVEY

The holographic image slowly rotated before them in the darkened briefing room. "Only a few of the more significant vectors have been applied to the model," the head of Stellar Cartography explained, "but we think this plot is adequate for gross navigational purposes. We can add local vectors as we acquire them, system by system. There appears to be enough good positional information here to make Stellar Cartography feel confident in recommending survey-start. Questions?"

Irina Dzudek looked around the room for questions, and seeing none, asked one of her own: "Where do we start?"

In answer to her query, all the stars in the model dimmed to about one-third their original brightness except one, quite far out toward the end of the arm. "Then let's get to it," she said and rose to leave.

—==++++==—

At the completion of the survey for a single system, the accumulated sensor logs along with reports and imaging data would be packaged in a compressed format that included a short report on the contents, and transmitted on a subspace channel to GEHQ on Relasta Commara. GEHQ would then respond to the transmission by saying how much data had been received. In this way, both the sending ship and GEHQ would have some confidence that the entire transmission had gotten through, or would know that the transmission needed to be re-sent.

So, when report #20 went unacknowledged, it was a matter of some concern to the communications techs, who immediately began diagnostic testing on all their equipment. That GETG, to get maximum range, narrow-casted their subspace communication made things more difficult: unless that transmission were aimed directly at your position, you would never receive it. After several days of diagnosis with no abnormal results, the secondary subspace array was reoriented toward Fleet HQ on Piraeus and a test message was sent. That message also received no reply and confirmed for Aquila Proesti that an undiagnosable problem had crippled their subspace communications capability.

In conference with her bridge crew, Irina Dzudek resolved to complete the mission while holding all further transmissions in abeyance.

They had, thus far, surveyed twenty systems and sent twenty packets and were immersed in the survey for the twenty-first. They were spending, on the average, just under four days per system including inter-system travel. Some of the system surveys were so elementary that it almost didn't warrant a report:

Star : type G1

Planets : 4 gas giants, 2 arid asteroidal, substantial dust

report ends

and the subsidiary material would be barely more than sensor sweeps of the planetary surfaces. And then there were the systems that took more time than the average:

Star : type G2

Planets : 3 gas giants, 1 arid asteroidal, 1 unary thalassine oxygen-nitrogen, 1 binary thalassine oxygen-nitrogen

Civita : at least one intelligent species on each o/n planet. All have developed rudimentary space-travel. The inhabitants of the binary planets seem very warlike. The inhabitants of the unary planet seem to be acting as police or referees. We very strongly recommend an early follow-up by a contact-expedition. Caution: very highly-developed weapons.

report ends

with sensor sweeps, samples of intercepted communications, language analyses, and the occasional high-altitude atmospheric sample. The chemical analysis of the contents of the upper atmosphere was often a good gauge of the level and type of industrialization at the surface.

The absence of communications with the Home Worlds did not have much effect on the conduct of the survey. All the things that needed to be done were still done as much on schedule as possible, the only exception being the last step, 'transmit data to HQ'. The only danger in this procedure was the possibility of running into a more powerful and warlike species and being destroyed before the communications link was restored: their research would be for naught and the next expedition would run the same risk.

'Venda Alxzandr and Petr Alioth were working toward eliminating that possibility. 'Venda, a Fleet Chief Engineer and therefore presumed to know everything — everything — about the operation of a starship, got a post-doctoral education in reverse-engineering from this thirty-something Johnny-come-lately. Petr's ability to sketch-out engineering requirements based solely on operational specifications was due largely, if not entirely, 'Venda thought, to Petr's intuitive grasp of the mechanics of high-energy phenomena. As he watched, Petr reinvented the Naval Vacuum Torpedo for the second time in his life, and 'Venda watched, awed, as Petr made daring leaps of logic from one construct to another.

"—and given the power requirements so far and the compact space in which it has to fit, we next ask what sort of power coupler might fit those joint restrictions —". It was a rhetorical question that Petr asked, since he already knew the answer, but 'Venda couldn't imagine anything that might fit the bill. "—maybe something like this," Petr suggested slyly, while he sketched a device such as 'Venda had never seen before, something that certainly didn't look like a power coupler, but as the lines came together 'Venda realized that that was exactly what it was, and it slowly dawned upon him that no other design would both do what was required and fit in the tiny space.

"That," Petr told him pointing at the sketch, "is probably what got the Navy so off their feed. I can't imagine another design that would meet all the requirements, and this design is not intuitively obvious. So — I have to conclude that I have independently reinvented — 'stumbled across', if you wish — a Galactic Congress 'top secret'. The odd thing about it is that it's not a difficult task to put such a device together. Some of the materials may be hard to acquire on the open market, but if you can lay your hands on them it's well within the capacity of most competent high-schoolers to build a weapon of mass destruction. The amazing thing is that it hasn't already happened — I mean 'more than once'. Can I be the only person — only civilian — in the Galactic Congress who has realized that the standard configuration for a power coupler is inadequate for this application? Can I be the only one who has thought about this particular design?"

"You may very well be, Petr," 'Venda nodded. "Your design is enough out of the mainstream of engineering thought that I had to see it complete before I had any confidence at all that it would perform."

"Well, 'Venda, the last question is: how big do you want it?"

"We don't have any VT launchers, nor any ordnance transports," 'Venda mused, "so I think we want them small enough to be carried by one person and laid on a make-shift launch rack. Thirty

kilos? If we can get the same seventeen-to-one delivery out of the warhead, that's about 500 kilo-equivalents. Thirty kilos."

"Thirty kilos, it is," Petr agreed. "And I'll be disappointed if I only get seventeen-to-one from these. I've learned a thing or two about high-energy reactions in the last twelve years. 'Venda, I think we should probably do the machining on the power coupler ourselves. There's no sense contaminating everyone on board with knowledge that may one day get them thrown into a brig." And 'Venda had thought that an excellent idea.

Having constructed one power coupler and tested it to make sure it would function as desired, 'Venda taught the food replicator the specifications and they were able, thereafter, to order as many bowls of 'Glaxina stew' as they needed, each one being what they now called an 'Alioth coupler'. Since there was no such thing as 'Glaxina stew' in reality, there was little chance someone might order it and get a surprise. The rest of the device was elementary, with the warhead being the only segment whose components were difficult to acquire. Difficult, that is, if you had not the resources of a warship.

By the time communications with the Home Worlds were disrupted, the two had constructed four optical-tracking devices and had plans for heat- and ionization-tracking models as well as one suggested by 'Venda that would do a random-prowl looking for certain specified ship configurations. The first test of their home-built VT delivered an estimated 800 kilo-equivalents of nitroglycerine onto the target, a free-range asteroid of an otherwise-uninhabited system. The yield, just shy of 27:1, was noted without comment by Irina Dzudek.

En route to system #24, drive power failed again, and it was fourteen hours before the engines could be restarted.

—==++++==—

As automated as the operation of a modern starship might appear to the untrained eye, the amount of trivia associated with running a device that complicated was substantial, so much so that in well over 100 days of mission this-and-that, neither Lya Tenai nor Petr Alioth had had the opportunity to recover the sensor data recorded by the equipment Lya had scavenged or jury-rigged to fit Petr's specifications. In fact, the equipment was still, as automated devices are apt to do, collecting data, oblivious to the fact that each additional day's readings were of diminishing use to Petr and were, in fact, now completely useless. Had either of them had enough spare time to give the matter serious thought, they might have shut the recorders down, but that was (perhaps) priority six or seven for Lya, and barely that for Petr.

Between her single-minded concentration on the drive-core and Petr's equally focused efforts with 'Venda, and despite the cramped quarters and limited crew they had actually been in each others' presence only four times in the last hundred-some-odd days. The last time they had run into each other in a corridor, it had been:

"I'm heading for something to eat. Care to join me?"

"I'd love to but if I don't get this locked down right away, 'Venda will have my head for dinner. There's an idea! Let's have dinner."

"Good idea. I'll call you."

That had been nearly two weeks ago. Neither one remembered that a call was to have been made nor that a meeting was to have happened nor that a dinner had gone uneaten. There simply wasn't time for a social life with a ship the size of *Aguila Proesti* and a crew of 87 — plus four academics. Everything that happened happened on a deadline. The local emergencies that cropped up had to be handled, and handled efficiently. There were deadlines to be met. Emergencies simply could not be permitted to get in the way.

When the ship entered a new system, all hands had assigned tasks. Stellar Cartography's job was very straight-forward: certify the star's position and real motion, count and catalog the planets and assorted debris that could be picked up by the sensors. Other departments scanned the radiation spectrum for emission signs, an almost-certain indicator of intelligent life. Linguistics and Cryptography worked hand-in-hand where intelligence was suspected or proven to 'crack the code', learn the language, estimate the level of advancement. And, so, there was the following entry:

Star : type G2

Planets : 4 gas giants, 3 arid asteroidal, 1 unary thalassine oxygen-nitrogen, substantial debris.

Civita : evidence of intelligent life via radiant emissions on the o/n planet. Rudimentary space travel indicated by the presence of substantial quantities of artificial material in orbit including two space stations. Some items in synchronous orbits may be communications satellites. Severe environmental degradation associated with permanent artificial gases in the upper atmosphere. Indications of abnormally high fission activity. Potentially several intelligent species, each with its own language (disproof of Empettira's monistic theory of planetary development?). Evidence of localized conflict, possibly inter-special. Early

contact highly recommended.

report ends

that was packaged with the various additional forms of acquired data and stored in the library against the day when someone, either here or there, was able to correct whatever was wrong with communications.

They had done all they could here and it was time to move on to the next system. The hyperdrive field generators had no sooner come on-line than the shriek of the drive-core monitors was heard throughout engineering. Lya Tenai's programs now automatically 'safed' the engines' containment fields and brought the core into shutdown as long as the ship was not then traveling in hyperspace. The system was shut down immediately and restarted, whereupon it again failed the instant the field was established. This time, however, the drive-core would not restart, and engineering went on round-the-clock-duty to determine what the problem was and how to fix it.

After six days of trying everything anyone could imagine, no matter how bizarre, 'Venda Alxzandr reluctantly reported to his captain that he had done all that he could to restore the ship's ability to travel between stars and that it had not been enough. That evening the bridge officers dined together and discussed their options. The list of options was very short:

1. Stay with the ship, trying and re-trying anything and everything to get the engines restarted.
2. Put the crew into suspended animation and set course for the Home Worlds across the inter-arm gulf at maximum impulse acceleration.
3. Move to the planetary surface and 'go native'.

'Venda volunteered to stay as long as was necessary, even if it took forever, to put his engines back in operating condition. The second alternative was deemed unworkable since, even at maximum acceleration, it would take over 80 years to reach home. Time dilation would keep them young, of course, but their mission would have been a total loss. In any case, if a rescue party were to be sent soon, such a drastic measure would not be necessary. Since they were effectively stranded for what could be a long time, a first-hand examination of the strange cultures they had found seemed an excellent use of their otherwise-free time, and might provide valuable insights for the cultural analysts back at GEHQ.

Assuming, of course, that they ever made it back.

—==+++==—

An asteroid belt encircled this star not too terribly far from the orbit of the only planet in the system with recognizable traces of intelligent life. To hide *Aguila Proesti*, huge irregular plates were fabricated in the shuttlebays and, as they were completed, they were taken outside and fastened, cocoon-like, around the ship. When the operation was complete, *Aguila Proesti* could easily be mistaken for any other asteroid, which was exactly the effect desired. One irregular crater boasted a cave that was actually the entrance to the interior of the cocoon. Thruster slave-units were mounted on the surface and camouflaged as well as they could be. *Aguila Proesti*'s navigational computer would keep the ship on its assigned station until the thrusters ran out of fuel, an event predicted to happen not earlier than one hundred thirty years hence.

From their position in the asteroid belt, *Aguila Proesti*'s sensors collected volumes of data, most of which was boringly the same, day by boring day. What kept the crew excited was the daily reports out of Communications, so much so that everyone who found themselves short of things to do would wander down to level four.

"Need any help?" they would ask, and they would be put to work immediately. The planet's various intelligent species seemed all to be addicted to communication. They broadcast on thousands of frequencies, maintaining an admirable discipline as regards regularity. Most signals could be predicted within the second of each planetary day, on the same frequency, with the same signature announcement-sound. This would be repeated for several days in a row, then there would be a change for several days, then the cycle would repeat. The most reasonable explanation came from a Navigation rating who suggested that the pattern represented entertainment, and that a particular 'block' appeared in the same position each cycle so that interested listeners would know when a particular block would appear. It made so much sense that none of them thereafter considered the signals as other than entertainment.

Some of the signals were vocal, and some were musical, and some were a blend. Others from different segments of the spectrum displayed the same regularity, but were neither voice nor music.

All of this signal data overwhelmed the Cultural Analysis section, and Fletcher Penta spent every waking hour poring over phonic transcriptions of intercepts that arrived faster than he could read them, much less interpret them.

Some weeks into their eaves-dropping, an entirely different form of communication was discovered quite by accident when one of the computer technicians decided to analyze the emissions from several localized sites whose signal looked to everyone else like random noise. Reasoning that the inhabitants of the surface wouldn't put up with random emissions, he electronically stripped the carrier

from one of the signals and got — another coherent signal much like the ones already being analyzed: some voice, some music.

This discovery spurred one of the communications techs to re-examine some of the earlier signals thought to be just so much noise, and to break them free of their carrier the same way. Looking closely at the data, she thought she discerned a recognizable pattern in the interval of 1/60th of a second, but there was another pattern overlain at about 1/40,000th of a second. This couldn't be sound — none of the other (obviously audio) signals ever went beyond 20,000 cycles per second. When she broke the signal into 39,600 slices per second, the pattern was almost irresistible. She wrote the slices, stacked one above the other onto a vidscreen and got — a picture. And as her equipment rewrote the screen with each successive pattern, the picture became alive. They were transmitting pictures, and the figure seemed to be talking, but what was it saying? The sound must be on a separate signal.

Overnight, Communications was transformed into an all-hands search to find the matching voice-and-vision. Each technician was assigned one video stream to watch and access to all known audio frequencies. They would flip through the audio spectrum, stopping briefly at each active frequency to see if the sound gave the picture any more meaning. Every few hours, someone would announce: "I've got one!"

This was the break they needed, but it also surprised them more than they thought was possible. The pictures they saw tore down in an instant their most cherished assumptions. There were not several intelligent species on the planetary surface. There appeared to be only one, yet that one was divided into dozens, perhaps hundreds of sub-groups, each of which had its own written and spoken language. It was not, as they thought, a disproof of Empettira's monistic theory of planetary development, it was another proof. Fletcher's job, already large, had suddenly become huge.

Yes, of course, there were four dialects of Gra, but any speaker of Gra would catch the general drift of the conversation regardless of the dialect being spoken. This situation was chaos — madness. None of the languages seemed to have any substantial connection with any other. Oh, yes, there were a few that broke that rule, but by-and-large there was a clear differentiation between each of the several languages. Until each language could be categorized and labeled, there was no way even to tell which might be predominant and which were of lesser importance.

Fletcher dropped all efforts at translating and began the more fundamental task of categorizing. Slowly, Fletcher and the Cultural Analysis team sorted out the various tongues based on frequency-of-use and localization. As soon as they had a clear

'winner', they concentrated on that one, translated the major word groups and taught each other to speak it, practicing night and day until they were, they thought, as fluent with it as they were going to be, short of going face-to-face with a native speaker.

Everything they learned was stored in the computer and this enabled them to quickly draw analogies between this society and their own. The natives knew, for instance, of the periodic table of the elements, but they arranged it differently. Slowly the connections were made between this fact and that: one of the broadcasts they regularly intercepted was a periodic news dispatch that gave them visuals of famous and infamous public figures and confirmed for them that most of the societies on the surface were mercantile in nature. Like the Tamar, these people would deal in any currency or wares. Almost universally, they valued certain of the chemical elements highly, to the point that they were almost currency themselves. That was good news, for Aguila Proesti's replicators could turn out surprising quantities of virtually anything. On the surface, the crew would at least not be penniless. Far from it, they could be as rich as kings if they chose.

9 - FEET ON THE GROUND

"More than anything else, what we need first is a safe place we can retreat to when things get too hectic," the Chief of Security proposed. "We're fortunate that, physically, our appearance is quite similar to that of the natives, but we are *not* fluent with their customs yet, and we *will* appear to them as oddities. We may even do something their society will not tolerate — that's a 'worst case' — and be forced to flee. We can't leave ourselves with no escape."

"They *do* trade surface area and dwellings for currency, and will probably do so also for precious metals. We're still waiting on Cultural Analysis to tell us what we should expect to pay for our base camp. My guess," Willi Gulassine offered as he repeatedly tossed and caught a small cylinder of gold, "is that we will need several hundred kilos of this stuff. Our replicators are good, but they're not that good. They can't manufacture anything out of whole cloth. Any ideas?" He looked out across the faces of the department heads and his academics.

Emmon Mar was the first to offer a suggestion. "Can we find out where, planet-side, the inhabitants cache their gold? With that, we can transport in, snatch it, and be gone before anyone realizes what happened —"

"—or blast our way out," the Chief of Security suggested, "if our timing is even the least bit off. I'd rather tune the sensors to recognize what we're looking for, and survey the asteroids around us. That's safer — no chance of a premature run-in with potentially unfriendly natives."

Willi looked over at 'Venda who signaled back that he would handle that task.

—==++++==—

In the end, it turned out to be a lot simpler than any of them expected. Several asteroids were located that seemed to have veins of gold within them. Rather than cut them open and strip-mine them, the metallic deposits (including several others of more practical value) were acquired by the matter-transporter, leaving cavities deep inside the rocks. After that, it was child's-play for the replicators to fashion the raw materials into whatever shapes were desired. Instead of ingots that might arouse suspicion, or coinage that would almost certainly arouse suspicion, they had the replicators produce jewelry in traditional Home World designs.

The insertion-team was picked from among the best (as far as anyone could tell) speakers of the selected language. Fletcher Penta would have been at the top of that list as the most fluent linguist any of them had ever met, but he had been excluded for safety reasons: he was not trained for first-contact and GETG would have a huge public-relations problem on their hands if an academic were killed or injured in such an operation.

For over two weeks, whenever any of them were in the presence of another member of the team, they spoke only their new tongue. Crew members had been watching them for anything that seemed out of the norm as defined by the broadcasts they had all been watching in every moment of their free time.

Their communicators had been set to send-only so that incoming signals would not cause a disturbance. Clothing appropriate to their mission had been obtained for them. Because the material had been something of a mystery, for authenticity's sake, several garments had been stolen by the matter-transporter the night before.

Now, in the early morning hours of their target location, they received their final briefing:

"You will be placed on a rural road within walking distance of the west side of an acceptably large town. Walk toward the rising sun and you should be in town in less than an hour. Gravity is about 86% of normal, so you should expect something of a thinner atmosphere. Between the two factors, you should be able to walk at a normal pace. We're putting you down in one of the warmer places we could find. Still, you will notice the temperature is on the cool side — that's during the day. This is a desert region. At night the temperatures will really bottom out, so you must complete this mission and get clear of the town before nightfall so we can pull you without making a scene. If you find other options make more sense, we will be listening to your channel and you can change plans via that route.

"We do not have a good feeling about protocol for selling such trinkets as you have with you. We don't know whether, for instance, suggesting that an offered price needs to be improved constitutes a serious social blunder. You'll have to play it very much by ear. In case of immediate danger, don't take any chances. Give the 'scram' signal and we'll pull you instantly.

"Any questions?"

There being none, the three volunteers entered the shuttle that would bring them close enough to transport in.

On the surface, they did a quick scan in all directions to make sure their arrival had not been observed, then began their march toward the rising sun. Several vehicles passed by overhead at altitudes of 200 meters or more, but none passed them on the surface.

Less than an hour later they came to the sign that told them they had arrived:

**Entering Prescott, AZ
Speed Limit 50
except where posted**

—==+++==—

"Can you direct us to a jeweler?" they asked the man sweeping the dust from the walkway. The man looked at them closely, peering through squinted eyes in the bright morning sunlight, and wondering what made him feel so odd.

"You're not from around here." It was a statement rather than a question.

"We're visiting," came the answer. "Is there a jeweler nearby?"

"Swanson's," he suggested finally. "About six blocks down. Where y'all from?"

The three exchanged nervous glances before Dita, the most senior, answered, "Pelouse".

"Pelouse —" he rolled the thought around in his mind for a moment. "Never heard of it. Are y'all here on vacation?"

He's awfully inquisitive, Dita thought. Perhaps he's a policeman. No matter, they were committed to a conversation of indeterminate length, having started it. She tried to remember the many scenes she had watched of people in conversation. May the initiator of a dialog also be the terminator? She couldn't recall any clear pattern and began thinking of ways to diplomatically end this one and move on.

"More business than pleasure," the younger one, Derinn, offered. "We may also be looking for a place to stay — permanently."

"I can help you with that," he told them. "I'm in real estate. Larry Duffield's the name." He stuck out his hand and was mildly surprised when two of them flinched. "Call me Larry." *Real estate — real estate — the local term for land and buildings, houses, homes — What luck!* the visitors thought. "Come on in," he pointed to his office. "What kind of place are you looking for?"

They explained that they were the advance unit for the research division of a large company which, unfortunately, they were not at liberty to name and that they would need a facility that could both house and provide laboratory space to a crew — staff of about ninety. Larry's eyes lit up. He knew he was looking at the area's first multi-million dollar deal since the Crash of '84 brought the worlds'

financial markets to their knees and dropped the price of real estate into the basement.

—==+++==—

Prescott had never been the center of the universe and never would be, but it had always managed to hold its own, more or less. Half desert, half mountain, its arid climate was thought by many terrestrials to be close to ideal, and this had buffered it from the winds of financial change. Its location far from the normal commercial centers had, however, made it a business backwater even through to the present early-22nd century.

The People's Revolt of 2084 was often cited as a cause of the Crash of the same year, but in truth, they happened essentially simultaneously and arose from similar causes. The Revolt that started in the European Union spread rapidly around the globe and in seven short days had toppled most of the traditional governmental systems, replacing them with much more compact structures whose primary mandate was to make it possible for people to live in peace.

To the relief of historians and politicians, the Revolt had been largely bloodless (if one ignores the politicians who committed suicide). In that year in Great Britain, the Official Secrets Act had come under fire and had polarized that nation in a distinctive way: most elected officials on one side, most of the electorate on the other, and with few exceptions to either case. Election Day 2084, a referendum revoking the OSA won at the polls by 4-to-1 and many of its incumbent supporters were swept away in the tide. Beginning that evening, when it was clear OSA was a thing of the past, most of the career elected officials of Great Britain, France, Germany, and Italy (in one case, eighty percent of the Legislature) fled the boundaries of the EU rather than face the wrath of the people after the material on file in UK became public knowledge.

Earlier that week in the United States, the Supreme Court voided a citizens' petition for a Constitutional amendment that would have stripped Congress of its immunity from civil suit. The court cited as its reason that such an amendment would subject Congress to 'inconveniences'. In a matter of days and aided immeasurably by a communication system that had never once since the mid-20th century been less than the envy of the world, any Congressman who had expressed even the mildest of criticism for the citizens' petition or the mildest of praise for the court's action found himself faced with a recall petition. In all, ninety-seven of 106 senators and 401 of the 435 sitting Representatives had already been notified by their home districts that they had been recalled when the British elections toppled the European Union. In what would later become the textbook

example of The Domino Theory at work, governments around the world, spurred on by massive street demonstrations, one by one responded to this outpouring of angry voters by reorganizing themselves, in some cases out of existence, in most into forms that bore little if any resemblance to what went before. When the dust settled a bare week later only Iceland and Australia, geographically polar opposites, still stood among the smoking rubble of two centuries of discontent, and the political face of the world had changed forever.

As the reins of power slipped from the hands of a world-wide elected aristocracy, financial guarantees made in the sure and certain knowledge that the average citizen would never be aware enough to object to them suddenly lost their value, and this devaluation of the power (and longevity) of governments had an immediate and catastrophic effect on the more speculative financial markets which collapsed forthwith. The extent to which highly speculative issues were linked to the more traditional areas of financial marketing was never fully appreciated until the moment a huge section of the market slipped beneath the waves, much as California's oceanfront from Monterey to Santa Monica had in August 2076. As the price of stock plummeted, so did the price of everything else, such that by year-end one could buy a piece of property for what would have been a fair price ninety years prior.

Twenty years into a recovery, prices of everything from milk to real estate were not very different than what one's twice-great-grandfather paid, but because of the severe currency fluctuations that accompanied the Crash, it was no easier to buy now than it was then. Alone among the radio-stable commodities, gold, silver, platinum, and diamonds continued to hold their value, and only those who had been lucky enough to have 'hard' investments in 2084 survived the financial heavy weather that ruined the rest.

—==++++==—

"Here's something you might be interested in," Larry Duffield suggested. "It used to be a government installation until 2087 when it was abandoned for lack of budget to staff and run it. It has the kind of room you need, but it's in the middle of nowhere." They looked from one to the other, each wondering where 'the middle of nowhere' might be. "There's only a gravel road servicing it, it's seventeen miles from the nearest state road — lots of acreage — it even has its own landing strip — taxes are going to be pretty stiff on this property, and I guess that's why it has stayed on the block all this time. Would you like to see it?"

"Could we see it tomorrow?" Dita asked. The thought of returning late to a strange town whose temperature approximated their 'polar winter' did not appeal to her.

"We still have time today," Larry urged.

"No, we still have several things we need to get done today," Dita insisted, "and before we waste a great deal of our time and yours we have to consult with our principals to ask them if this property will meet with their approval. Shall we plan on an early start tomorrow assuming all goes well?"

"I'll see you in the morning," Larry agreed.

"By the way," Dita asked, "what price should we expect to pay for that property?"

Larry cringed at the question and the likely effect of an honest answer. "The asking price is two million, and I understand that it is not negotiable."

The three left Larry's office and continued down the street in search of Swanson's Jewelry which they found in less than half a mile. They were mildly surprised that the proprietor's name was not Swanson, but he was very helpful nevertheless, despite the fact that these customers were obviously not in a buying mood.

The objects they offered him were replicas of pieces that were then currently fashionable among the elite of the Home Worlds. The bracelet, in particular, caught his eye because of the wonderful colors that seemed to shimmer like an aurora around it. The top few microns of surface gold had been etched by radio waves in a pattern that consisted of submicroscopic cavities, each of which resonated at a particular frequency. When agitated as by a sudden change in temperature or a nearby noise, the cavities would generate small electromotive fields, mostly in the range of visible light. As a result, the bracelet kept up a constantly-changing light show that seemed to emanate more from the vicinity of the bracelet than from the bracelet itself.

"Where did you get this?" he asked.

Dita apologized that she was not at liberty to reveal the source of the object but asked in return whether he would be willing to purchase it.

"I can give you six hundred dollars for this." Dita affected what she thought might be a 'disappointed' look. "What's the matter?" he asked.

Throughout the known universe the rule was 'buy low, sell high', so Dita knew that six hundred dollars was a fraction of the object's value.

"Have you ever seen anything like this before in your life?" she asked him in return. He admitted that he had not. "I really expected to sell this at a much higher price than that. After all, you'll

resell it at what?, five times that price?" *More like three times*, he admitted. "Then make it easy for me to part with my favorite piece," she lied, not knowing how far societal norms would let her press the bargaining, "fifteen hundred."

"You're robbing me," he told them and they all backed away in fright that they had crossed some invisible line and were now in danger of being detained by the authorities, "but the piece is so beautiful I can't resist. What account shall I credit?"

"We have no financial connections in Prescott," she pronounced it 'Prezgoat'. "We need currency until we can establish ourselves."

"That's no problem," the jeweler assured them. "My bank is across the street. They can set you up with a draw account in no time at all. Would you like me to introduce you to my banker and help get the process started?"

They thanked him profusely and the four of them went across the street to the bank where an account was opened with fifteen hundred dollars in the name of Dita Caridan, General Delivery, Prescott, Arizona, and a debit card was issued in her name.

As Dita handed the bracelet to the jeweler, the bank manager whistled in amazement and asked to take a closer look. It dropped into his hand, the colors flashed brilliantly and a faint whiny humming sound emanated from the circuits in the watch on his wrist.

The banker was awed by the piece. "I must have one like this, Ms. Caridan. Where can I find another?"

Dita and the jeweler looked deep into each others' eyes trying to read what was going on behind them. Dita spoke to the bank manager, never taking her eyes off the jeweler's.

"I'm not certain that another one exists, but if I were to find another, what do you think would be a fair price?" she asked the banker.

The banker hesitated "Two thousand — perhaps twenty-five hundred — times are still tight, but this — this is absolutely miraculous!"

If this banker were willing to pay that much, she might expect double that from society's elite. With her gaze still locked on the jeweler she promised him: "Mr. Stewart, you will have the next one I come across. You understand, of course, that Mr. Patiriakis and I have a 'business relationship' and that your discretion as to the details of our transactions is part of the price you will pay for yours?"

"Of course, Ms. Caridan. You have my absolute discretion regardless," he assured her.

"Thank you, Mr. Stewart, it's been a pleasure dealing with you. Mr. Patiriakis, shall we repair to your shop to continue our discussion?"

"Yes, let's."

—==+++==—

Where ever you are in the galaxy, a bed still looks like a bed. Dita Caridan fell across hers in the Prescott Hilton as her companions slumped into chairs. They had been driven inside by the rapidly falling temperature of an approaching Arizona April evening. It was more convenient than transporting up to the shuttle and, now that they saw their accommodations, probably more comfortable. Besides, there was a food-delivery establishment on-site where they could sample some of the local fare.

"You took some chance, Dita. I thought we were all in trouble when you confronted Patiriakis over the price," Derinn told his leader.

"Yes, it was a calculated risk, but a banker is always a banker," Dita smirked. "They are in the business of knowing value. Did you see the banker's face? He was afraid that bracelet was one-of-a-kind. He said he would pay twenty-five hundred. He knew what Patiriakis had paid for it. He would have gladly given me ten times that, but we need a thousand times that or more.

"The point is this: his reaction told me that Patiriakis had made the purchase of a lifetime. I have no doubt our friend, Dmitri, will convert that bracelet before their moon can complete a full cycle, and he will make a thief's profit in the process. He knows what those bracelets are worth. He knows he is about to make a huge profit even if the one he now owns is the only one of its kind. His silence and his cooperation are assured now that he can see the prospect of being the sole distributor for our wares, the sole beneficiary of our technology.

"I'm sure I already knew that the instant I locked his eyes, and he knew that I knew.

"There's something else — one-hundred percent of the locals who have seen the bracelet were attracted by the aura. Does that suggest anything?"

"Considering that I've never been able to see it, myself," Derinn offered, "I'd say that it does. Do you suppose all of them may be able to see it?"

"An amazing speculation, don't you agree?" Dita asked. "One of our people stumbles across an admittedly visually delightful phenomenon which, unfortunately, can only be detected by one person in eight, and here's a species all of whom, perhaps, can enjoy it. That's ironic, but it also works very heavily in our favor if true: it means that everyone is a potential buyer. If we adjust the process to merely place a thin layer of gold onto a less valuable metal, we can stretch our gold supply quite far. We may even be able to buy that

property Mr. Duffield is trying to sell us. I'm starting to get hungry. Anyone else?"

None of them were brave enough to order from the menu without knowing what, exactly, they might be getting. In general, their senses were sharp enough to enable them to recognize potentially poisonous foods, but they wanted to avoid a scene in which something they ordered turned out to be something too hazardous to eat. They watched the diners around them and finally settled on the salad bar, a setting that would let them get close to the foods they were about to eat before committing themselves.

Without knowing it, they each consumed enormous quantities of chlorophyll; not toxic, certainly, but their nervous systems would react to it by keeping them awake all night and putting them all to sleep mid-morning.

With the dawn, the desk clerk at the hotel arranged transportation for them into town and they prowled the still-sleepy streets of Prescott looking for Larry Duffield's office. They found him, instead, eating breakfast at a near-by restaurant. He waved them in and they joined him at the table.

"What's that?" Dita asked, leaning closer so that she could surreptitiously sniff the contents of his plate.

Larry looked at them as though they were from some other planet. "You look like you've never seen scrambled eggs before."

"Of course," Dita smiled at him. "I guess they just prepare them differently at home," she explained, "but this looks nice. I think I'll try some." The others joined her in that, adding an assortment of other foods: bacon, home fries, and grits. All of it seemed quite palatable except for the bacon, which they thought had a bitter, acrid flavor. The home fries produced such an avalanche of pleasant sensations that none of them were able to stifle giggles while eating them. Larry would have given his right leg to know what they thought was so funny.

After breakfast, Larry drove them out to see the property. It was quite far from town to the North over roads that had once been serviceable, but on which disuse had taken its toll.

In the middle of the 21st century, computer technology had experienced a sudden quantum jump after sixty years of research into high-temperature super-conductivity had proven the technology not simply economically practical, but dirt-cheap as well. It then became possible for the ordinary man-on-the-street to own pocket-sized computers with the abilities of mainframe devices, and within the year they outnumbered telephones, televisions, and personal vehicles. By mid-year following, an explosion of software made it possible to have its on-board computer drive your car with near-absolute safety to any spot on the same continent. Within three years, the same was true of

personal aircraft. When aircraft became as easy to fly as cars were to drive, the demand for them rose dramatically, the supply rose to meet it, and the economies of scale drove the price to the point that literally anyone with a steady job could afford one. General aviation blossomed so much that it became, once again, a pleasure to drive a car over roads no longer crowded with them. Luxury cars such as the one Larry now drove, coped adequately with roads whose maintenance was no longer necessary to the functioning of the economy, not that this particular one ever was. It twisted and turned in dozens of switchbacks to the flattened peak of a barren hill.

At 3800 feet, the wind constantly blowing in from the Mojave hundreds of miles to the West had long since stripped the land of anything that might be used to support vegetation. This relic of the last days of the era of pork-barrel politics would have been an agricultural research station had it ever opened. Before that could happen, the People's Revolt took the government largely out of the agricultural research business and left the site ready for business, but empty. And there it had lain, unused, because of a policy that prevented its sale for less than ten percent of its original twenty million dollar cost. But for the fact that two million dollars was moderately hard to come by these days, coupled with the perception that the site itself had as near to zero utility as one might judge possible, it might have been snapped up long ago for what it was worth, about one-half million in current dollars.

The other side of that coin was the configuration of the site: it was isolated, it had accommodations for, perhaps, a hundred permanent staff, and it had several buildings that could be easily converted to laboratory use. From Dita's point of view, it was as close to ideal as she dared hope. Larry felt vaguely uneasy about the ethics of trying to sell this white elephant to an unwary buyer. Dita tried to mask her enthusiasm so as not to drive up the price.

"Is that two-million price firm?" she asked him.

"Very firm. That's probably why it's been sitting here unsold all this time," Larry grumbled.

"Two million is more than we had planned on spending, but we'll bend on that point," she told him. "Let's go back and see about financing."

10 - HEAD IN THE CLOUDS

Dmitri Patiriakis made a small fortune, even considering that he had to pay double for the second and subsequent bracelets what he had paid for the first. As he suspected might happen, the Boise 'upper crust' went virtually berserk over this novelty. By week-end, demand had driven the price to the vicinity of \$4,200. Even considering the cost of doing business from that distance, the \$1,200 gross-profit-per-unit threatened to make Dmitri one of the richest men in Arizona. The threat was realized when the orders began to arrive from Houston and Savannah.

Ben Stewart received the only other bracelet made of solid gold, made especially for him before the process parameters were altered to produce gold-plate on base metal, in exchange for which he transferred two thousand hard-earned dollars from his account to Dita's.

Between the bracelets and the earrings and the brooches, Dita's account balance soon teetered on the edge of three million dollars. Larry Duffield closed the deal on the property for them and helped them find the furnishings they needed to make their new base camp comfortable. If he noticed that none of the purchases were for laboratory equipment, he never mentioned it. That Dita Caridan had paid for the property with a single bulk transfer was unusual, but it avoided a whole series of questions that she otherwise would have been hard-pressed to answer had they been asked by a potential lender: her primary source of income, for one; her last permanent residence, for another. Not being privy to the details of Dita's sudden wealth, Larry's curiosity was driving him near to madness, but the prospect of a commission that would make him one of the richest men in Arizona was all the answer he needed — for now.

In early June of 2105 *Aguila Proesti*, now dressed as an asteroid, made a pass close to Earth during which several critical pieces of equipment were transported to their assigned spots within the compound, along with most of the crew. It then returned to its previous spot and continued to orbit with the rest of the asteroids. Only 'Venda Alxandr and two other senior Engineering staff members remained aboard to continue their investigation into the death of their hyperdrive. The rest of the crew took two shuttles, leaving one behind, and returned to the planetary surface.

Larry Duffield's sale of a piece of property generally considered unsellable and the \$120,000 commission that accompanied it made him something of a celebrity not only in Prescott, but around

the state as well. The warm feelings this gave him reflected to some extent on the strangers who had helped him get there, and he reciprocated by driving out to the property every week or so to see how things were going. The new residents — there seemed to be about ninety of them — seemed to know little or nothing about their new country, and Larry took it upon himself to be a one-man cultural exchange mission for them. It was through him that they were able to link into the world-wide communications system, the Internet, and begin using it to reach out across the globe to ask questions and to acquire knowledge. Eventually, most of them learned to drive their surface vehicles, automobiles, and to fly their air vehicles, airplanes, giving them a low-visibility mobility the shuttles, now safely hangered in the largest storage building, would never provide.

Dmitri Patiriakis periodically reordered a supply of bracelets, brooches, earrings, rings, pendants, and assorted other trinkets. The always-limited supply constantly inched the market price of his wares up to the point that the dime-store bracelets were now selling near \$5,000 and Dmitri had started to market them in the European Union as well. He was already a millionaire, a rarity anywhere these days and simply unheard-of in Prescott. Bankers across the Southwest knew his face and his name and were always pleased to advance him a little operating capital. The trinkets he sold had already been the subject of a lengthy article in Scientific American, and a \$50,000 prize had been offered for anyone who could explain their almost magical luminescence.

The 'colonists', as the crew had begun to call themselves, spent their days assessing the state of the physical sciences on this unfortunately backward planet. 'Earth' the residents called it, and the most vigorous means of propulsion available was the chemical rocket. Ingeniously, these generally used hydrogen and oxygen whose exhaust produced water vapor, a substance that dissipated harmlessly into an already badly polluted atmosphere. Their ground and air transportation was largely fueled by liquefied petroleum gases that, while it did nothing for the atrocious levels of noxious gases in the atmosphere, at least produced effluent that would eventually decompose. They had not yet developed Inertial Suppression or Inertial Enhancement fields, and it appeared they had thus far not even started any research along these lines. This was a very bad sign, because control of matter-antimatter reactions required high levels of inertial enhancement to prevent a 'runaway'. Hyperspatial travel required high levels of inertial suppression enclosing the entire ship, including the inertially enhanced drive-core.

The history of their science was littered with failed attempts to sustain a controlled fusion reaction, although they had been singularly successful with the uncontrolled kind. The literature

surrounding the subject clearly indicated a recognition that nuclear motion was rapid enough to make this difficult, but all their efforts had been directed toward starting the reaction in so short a time that the first nuclei would fuse before having time to move apart. Failure after failure had not yet convinced them that the task was impossible.

It would have been a simple enough thing for one of the colonists to demonstrate that, given an Inertial Enhancement field of sufficient magnitude, a fusion reaction would start spontaneously. The Terrestrials, if their scientific literature was any indicator, had never even considered inertia as other than a constant. It would have been a simple enough thing for one of the colonists to demonstrate that it was not. To be fair, the Terrestrials had come within a hair of stumbling onto the technique for altering inertia perhaps twenty times in the last century, each time drawing back while a bare two steps from the edge of knowledge because the ideas that lead to the precipice were forbidden by their scientific tradition. Those who proposed such ideas were inevitably labeled 'crackpots', a term the colonists were unable to decipher. One day someone would violate the Prime Directive and the Terrans would stand there, jaws agape, stunned that they had not seen what was now so obvious.

That the Terrestrials might find it themselves the colonists now considered a virtual impossibility. The condition of scientific inquiry on Earth in those days was nothing short of abominable. It was the inevitable result of scientists and technicians getting careless: the Challenger disaster in the mid-1980s killed seven astronauts and almost killed the United States' manned space program. The Mir-IV disaster in 2067 killed two astronauts, 1,711 people on the ground and damaged the Alhambra in ways that had not yet been repaired. A genetically-engineered virus designed to destroy a fungus hosted by certain varieties of fruit was accidentally released onto the Indian subcontinent in 2069 and reduced India's population by a factor of two hundred in a mere twelve days. The explosion in orbit of an illegal nuclear-powered Arab League satellite in 2072 wiped out world-wide communications for 14 weeks and cost billions of dollars in replacement equipment. The straw that broke the camel's back occurred in October of that same year. No on-site investigation has yet been possible. Speculation holds that a shipment of nuclear fuel for Columbia University's sub-critical reactor may have been loaded before the old fuel rods were removed, although this seems unlikely. At approximately 10:17 A.M. Eastern time on Wednesday, October 19th, 2072, its sub-critical reactor having 'gone critical', Columbia University disappeared in a five megaton flash. The blast fractured the bedrock of Manhattan Island toppling every building over thirty stories and 80% of everything else. Of the estimated seven million people on

the island at the time, virtually no one survived: less than 120,000 eventually made their way to safety.

Fundamental research into the nature of things nuclear came to a halt and the notion of doing 'fundamental research' on virtually anything was thereafter looked upon with great suspicion. All research was now secret and privately funded, the major players getting together several times each year in an 'invitation only' symposium to swap notes. What was published from these symposia was very likely only a shadow of what was really happening.

—==+++==—

Every few days, 'Venda Alxzandr would report on the progress of the investigation into the failed hyperspatial drive. So far, all his reports had been disappointingly negative. The one bright spot, if it could be called that, was that careful monitoring had proven conclusively that the culprits were the new sub-micro Jepperson MAMVs. Every single valve had failed. The historical reliability of the valves was such that spares were never needed — until now, and because the technology was a closely-held secret, diagnosis was difficult and repair was impossible. The problem was turned over to the computer: how many Jepperson valves be repaired? The answer would be a long time coming, if ever. There was nothing further that could be done aboard ship.

The last remaining shuttle was dressed asteroid-fashion as was her mother-ship and the three engineers abandoned Aguila Proesti until such time as the computer might announce a solution. The shuttle was placed in a geosynchronous orbit above the equator dead south of Prescott where it could act as a communications relay between Aguila Proesti and the surface.

All hands turned to the search for advanced technology.

—==+++==—

Doctor Avram Burnside of UNLV's College of Natural Sciences pondered the possible meaning of the words floating before his eyes on the computer monitor: "Has anyone ever tried to deal with inertia as other than a constant?" The concept was, to say the least, intriguing. It would make his students open their minds as never before to cope with such a question. He rolled over in his mind the words he would use to ask it: *"Under what circumstances might inertia be other than a constant? Without resort to frivolity, speculate on the conditions that cause us to treat inertia as a fixed quantity, and whether and how such conditions might be altered."*

He punched "Print Screen", ripped the sheet clear of the printer, and slipped it into the folder for his class notes. He would spring it on his seminar class in the morning.

As he suspected, most of the answers he got showed a catastrophic failure of imagination, but there was one, just one, that demonstrated vision, just one that made him think there might, in fact, be a practical solution to the question.

"Mass tells space how to curve, and space tells mass how to move. That which we call the 'universal gravitational constant' is part of the overall equation relating mass and movement to inertia, but what makes the 'universal gravitational constant' constant?" Spencer Carson's answer began.

"Grant the existence of a gravity-impervious field that isolates us with half the mass of the universe. Is the UGC still what it was in the absence of the field? I suspect that we would find the UGC noticeably changed, causing space to curve differently, mass to move differently, and inertia potentially adjustable over a wide range of values.

"Grant the existence of a gravity-impervious field that includes the present universe plus, via dimensional distortion, -n- alternate universes. Is the UGC still what it was in the absence of the field? I suspect that we would find the UGC noticeably different, thus infinitely extending our ability to cause inertia to be whatever we chose.

"How such a field might be created is a matter of current research at JPL-Tulsa, according to available abstracts. Various authors, notably Cardozo, et.al. in the latter half of the 20th century, have suggested that the basic four dimensions we recognize as 'normal' may, in fact, be polymorphic, plastic, and transitory. Before his death at the hands of the Holy Roman Inquisition in 2079, Bradford's experiments with trans-finite electro-massive waves produced results that many reputable scientists were prepared to attribute to dimensional distortion, in the absence of better explanations.

"The reluctance of science to aggressively promote this research line following the Fall of the Vatican in the People's Revolt continues to amaze me."

Burnside attached the segment of print-out to Carson's response, scribbled a short note, and dropped it into his outgoing mail tray. The note read: "Potential employer?"

—==++++==—

To: general_delivery@lab1.prescott.asufn.az
From: Spence_Carson@nevada.ednet.UNLV.edu
Subject: Inertia as a variable

Interesting question. I can't help wondering what prompted it. JPL-Tulsa seems to be working in an area of research peripheral to this, and I have some insights of my own. Prof Burnside, UNLV, thinks we ought to get together to kick this around. I will receive my doctorate in the Spring and will then be looking for full-time employment. Researching this field would be ideal. Is your lab hiring?

—==+++==—

To: Spence_Carson@nevada.ednet.UNLV.edu
From: fletcher@lab1.prescott.asufn.az
Cc: ditaa@lab1.prescott.asufn.az
Subject: Inertia as a variable

The lab is not 'hiring' in the strictest sense of the word but we may offer a few fellowships. 'Spring' sounds about right. We would be pleased to have you and Prof Burnside visit us later this year so that we can look each other over.

We will be starting a big push about then and will be looking for the best minds we can find to help us.

—==+++==—

To: fletcher@lab1.prescott.asufn.az
From: Avram_Burnside@nevada.ednet.UNLV.edu
Subject: Invitation

Soon-to-be-Doctor Carson and I would like to visit on the Monday after Christmas, if that fits your schedule. Classes will be in recess until early January, and we could spend two or three days, if necessary. I can fly into any nearby airfield. Please let us know when we should plan to arrive and how long we should plan to stay.

—==+++==—

To: Avram_Burnside@nevada.ednet.UNLV.edu
From: fletcher@lab1.prescott.asufn.az
Cc: ditaa@lab1.prescott.asufn.az
Subject: Travel plans

The nearest airfield is on the grounds of PelauseLab. We are located approximately 28 miles NNW of Prescott's airport. Please plan to arrive Monday morning, December 27th and depart late on the 29th.

—==+++==—

Burnside keyed the microphone: "Pelauselab, November-5-7-8-1-zero-Uniform, six miles north, five thousand, inbound."

"One-zero-Uniform, Plauselab, winds 1-7-zero, 6 knots, barometer two niner niner eight and steady. Welcome to PelauseLab."

The tiny Embraer 9040 touched down lightly and slowed abreast of several hangars. Professor Burnside angled it toward the one whose doors were being rolled wide by one person as another figure waved him onward. He rolled to a stop, cut power to the single fan-jet engine and listened to it as its whine fell in frequency and volume.

A parka-clad figure stepped from the station van that had pulled in behind them. He extended his hand. "Fletcher Penta."

Another hand connected with his. "Avram Burnside. This is my associate, Spencer Carson."

Fletcher shook hands with Carson. "The others are waiting for you in the dining hall. Stow your bags in the back of the van and we'll be on our way." A roil of hot air hit them as he flung the rear cargo doors open. Carson and Burnside looked at each other and the same thought flashed through each of their minds: *"Why do they keep it so hot?"*

The dining hall was like a hothouse. Both Burnside and Carson had shed their down vests during the ride over in the station van and did the short walk from the van to the building in their shirtsleeves to be met by an inside temperature of 90°F. Only the desert's low humidity kept them from openly perspiring.

Lunch was 'small talk' punctuated by the occasional "Hot in here, isn't it?" which was always answered by nervous sidelong glances.

After a perfunctory introduction to Irina Dzudek, the site manager for PelauseLab, 'Venda Alxandr, Lya Tenai, and Petr Alioth escorted the two physicists away from the main mass of people so that the five could discuss obscure technical matters. A few of the younger Engineering staff tagged along for the education. All of the 'work' they did that day was 'chalk-talk': playing mathematical 'what-if' games on the conference hall's wall-to-wall and floor-to-ceiling scribble boards. The colonists seemed to Burnside and Carson to be quite slow in picking up mathematical concepts, although they seemed no slower picking up complex ideas than simple ones. In truth, it takes the same time to translate either, and that's what accounted for their slowness. They also had to translate in the other direction, too, because, while mathematics and mathematical concepts are universal, notational conventions and manipulative techniques are not.

So their work and their discussions went more slowly than any had hoped, but seemed to be making progress in a manner of speaking, as each side grew to recognize the others' oddities.

By the end of the day, all of the colonists had privately agreed among themselves that they could wear sweaters or

sweatshirts and reduce the temperature to about 75°F for the comfort of their guests. The evening meal, therefore, was a much more pleasant experience, if you can discount the growing curiosity that both of the visitors were just now becoming aware of.

Late in the 20th century a craze for 'political correctness' swept the world starting with the Western democracies and eventually appearing in every civilized nation without exception. The result, after ninety years of incubation, was that one could not write or utter an ethnic slur regardless of one's position in society. 'Gutter snipes' (the term actually cannot be used except as an example of an expression that may not be used by a civilized person), the meanest layer of society, would never consider using a racial epithet, not even in anger. It was even considered uncouth to notice, let alone mention, physical or behavioral differences of casual acquaintances. Larry Duffield's non-committal *'You're not from around here'* was about as far as anyone might go in that direction.

Culture demanded that one be blind to most physical abnormalities, and both Carson and Burnside were cultured people, but they found themselves unable to overlook their hosts' aversion to cold. The 90°F indoor temperatures of the first day had been enough to break down a cultural barrier, and they now noticed that their hosts' eyes had no pupils and their fingernails covered not just the tops of their fingertips, but the sides as well.

Their years at the University had brought them into contact with people from many distant lands, but never had they seen the physical characteristics they saw now on not just some or most of their hosts but on all of them.

"Doc, I hope you won't think poorly of me for this, but have you noticed anything odd about the people here?" Spencer Carson started.

"If you mean other than the fact that they like their temperatures on the warm side, yes," Burnside agreed. "And I don't think poorly of you. What have you noticed?"

"Besides their eyes and fingernails, their diet seems a little out of whack," Spencer orated. "Dinner last night: the only vegetables were carrots and home-fried potatoes. I associate home-fries with breakfast more than dinner. And that's another one: breakfast: when was the last time you had a salad for breakfast?"

"I can't remember ever having a salad for breakfast, Spence," Burnside mused, "but maybe it's just a cultural thing."

"I could buy that, Doc," Spencer answered, "if I didn't have the experience of UNLV. With 52,000 students from all over the world studying all the major scientific areas, what's the probability that we

have never met anyone from this obviously technological society? I think it's pretty small. I think it's zero."

Burnside smiled. "I'm inclined to agree with you, Spence. Have you developed a hypothesis yet?"

"Yes," Spencer confirmed, "but it's not one I wish to go public on just yet."

"Then I think it's probably the same hypothesis I'm incubating," Burnside said.

"Which is —?" Spencer prodded.

Burnside pursed his lips. "I think we may be dealing with non-humans. There are no non-human technological species on Earth, therefore — they must be extraterrestrials. Let's go find out, shall we?"

—==++++==—

If there had been any water on the ground that afternoon, it would have been ice before dark. This winter had been particularly nasty with more days of freezing lows than any in the past forty-four years, so they expected few if any of their hosts would be out and about. It was quite plain that they did not like cold weather. The grounds of PelauseLab would be empty of walkers and strollers. Only the most urgent business would bring any of them out tonight.

The 'tour' of the facility that they had been given after lunch was so minimal that 'cursory' would have been a screamingly funny understatement. During the tour, Spencer had repeatedly asked "What's that building?" and had nearly as often been told "Storage." It was so obviously an evasion ('lie' was not a term civilized people used except in the presence of incontrovertible evidence) that he could no longer contain his curiosity.

Dinner was scheduled for 9:00pm, and they had been told that it would be buffet-style: sandwiches, wine, and cheese and, of course, more technical talk. By 6:30 it was full dark. The two left their quarters dressed for an evening jog around the compound on a route that would take them past all of the 'storage' buildings starting with Building A.

While Professor Burnside kept watch, Spencer (carefully so that they could be relocked) forced the doors, those that were locked, on each of the utility buildings lettered in alphabetical order. All of the buildings were huge and dark. Most of them were empty. Only one building contained enough material to rate calling it 'storage'. They stopped looking when Spencer popped the door of Building K.

The interior was dark, as were all the others, but even in the meager light of a dozen or so windows they could make out the looming presence of what at first seemed like a pair of tour buses. As

their eyes accommodated to the low light, details gradually emerged. They were not buses, and if there were wheels, they were well hidden. One of them seemed to be facing the trespassers and the other facing away.

Avram Burnside advanced toward them. He ran his hand along the smooth side and detected a faint rippling where something had been painted or decaled onto the surface. There was not enough light by far for him to be able to make out the design his fingertips had detected.

"Do you have a flashlight?" he asked Spencer.

"No. Maybe I can find a light switch," Spencer offered.

"No!" The whisper was almost a shout. "We'll come back."

As he had done several times before, Spencer realigned the door jamb and pulled the now-unlocked door shut behind him. The latch clicked reassuringly and they continued their stroll of the area as if nothing had happened. They saw no one and, as far as they could tell, no one saw them. They were back in their quarters a shade after 7:30 and on their way back to Building K, flashlights at the ready, moments after that.

They kept the flashlights set on 'dim' but, even so, it was plain they were looking at vehicles of some sort, and if their hosts were extra-terrestrials, these could be high-vacuum craft. The raised areas that Avram Burnside had detected in the near-darkness turned out to be — they thought it might be writing, but it used an alphabet neither of them had ever seen before. Spencer Carson sketched it into his notepad computer as the two discussed what the vehicles might be and what they might be for.

"I would love to see the inside, Prof," Spencer told Burnside. "Any ideas how we might get in?"

"Maybe we should command it to 'Open, Sesame'," Burnside suggested. "But I don't even see anything that might be a door. And this could be Pandora's Box we're talking about opening."

"Do you want to stand near the door?" Spencer suggested, a note of warning in his voice. "That might give you enough time to get clear if it turns out to be too dangerous."

"What are you going to do, Spence?" Burnside demanded.

"Just as you suggested," Spencer said. "I'm going to command it to open."

"You're crazy," Burnside told him as he edged toward the door, "but go ahead. I suppose I couldn't stop you now anyway, could I?"

Spencer Carson shook his head. "Ready?" Burnside nodded. Spencer Carson turned to face the vehicles. "Open." he commanded.

His command was answered by a twin 'thump-thump' and the entire rear sections of both vehicles began to swing upward. As

they did so, interior lights came on revealing the strictly utilitarian inner surface of the machines and two seats forward, presumably for whatever constituted a crew. Spencer stepped up into the opening created by the up-swung hatch and was joined seconds later by Professor Burnside.

All of the markings on instruments and control panels (if, indeed, that's what they were) were in the same unusual alphabet. They touched nothing, fearing that they could unknowingly do something they would regret for however long their lives lasted after that.

"I've seen enough," Burnside declared.

"Me, too," Carson agreed.

They exited the vehicles the way they came in. Outside, Professor Burnside turned and ordered "Lights out." The interior lights obediently dimmed to zero. "Close." Hidden servos now swung the hatches down to their closed position.

"Let's go to dinner."

11 - AGUILA PROESTI

Derinn Talaar raised his hand as he had been taught was the 'proper' way to begin a question and Professor Burnside recognized him immediately. "I'm not sure I understand what you are driving at with that line, Professor, and I suspect you may have made an invalid assumption. At least, when I work it a different way, I arrive at a slightly different answer." He tapped the face of his pad computer with a scribe.

'Venda Alxzandr turned and glared at him as if to say "*You fool!*", but it was too late. Professor Burnside was already moving in Derinn's direction.

"Let me see," Burnside asked, extending his hand.

Derinn looked up at him from his seat with a look of shock that he could have made such a calamitous error. "I —" but Burnside reached down and took the pad from Derinn's unresisting hands.

The graph on the plate was similar to Burnside's, but unquestionably different in the details. That, however, was not the primary focus of his eyes. The controls on the computer were in the same angular alphabet that he had first seen written on the sides of the vehicles in Building K. He handed the device to Carson. "What do you think?"

Spencer looked intently at the layout of the pad. "This is very interesting." He got up from his chair and approached 'Venda Alxzandr, holding the pad before him. "Does this look alright to you, 'Venda?" he asked.

For a moment, 'Venda thought they might have seen only the graph that, by itself, was not particularly incriminating. "Yes, it seems alright to me."

"Then perhaps you will be kind enough to tell us in what language these symbols are written," Spencer finished.

"Jop!" 'Venda pressed the annunciator on his belt communicator. "Captain, we need you in the lecture hall."

—==++++==—

Irina Dzudek strode into the lecture hall ready to bite 'Venda's head off for calling her 'Captain' in public, but her steps slowed as she caught the look on the faces turned toward her. She knew the answer to the question before the first word had passed her lips. "Is something wrong?"

Avram Burnside rose to speak. "Yes, Captain, I believe there is, and I believe the time has come for you to rectify that. Would you like to tell us all the things you should have told us and haven't?"

Dzudek turned to face him. "Professor Burnside, we've told you all that we think is necessary for you to know. Do you have something specific in mind?"

"I do," Burnside answered. "My associate here, Mr. Carson, and I think your alphabet is one of the most unusual things we've ever come across. In fact, despite coming in regular contact with every major technological society on the face of the Earth, we've never seen anything like it, which leads us to the conclusion that yours is not one of Earth's major technological societies. Yet yours is technological, therefore you must not be from Earth.

"By your actions, you are not here as conquerors. It's possible you are here as explorers."

"We speculated that you might be marooned here," Spencer added, "but the presence in Building K of two apparently working vehicles of a style we have never seen before makes that an unlikely scenario. So, we wonder why it is you are here —"

"—and, more to the point," Burnside finished, "why we are here."

It was always a gamble, she thought. Their physical resemblance to Terrans was rough at best. The first person they met on the surface recognized that virtually at once. Luckily, all the Terrans they had ever met were ones who had a great deal to gain from ignoring physical quirks — almost all.

"If what you say is true, what will keep us from disposing of you — quietly of course — and thus hiding our alien nature?" Dzudek asked.

"For one thing," Burnside began, "several people back at UNLV know where we are and who we have come to see. For another, you didn't ask us here out of idle curiosity. You need something from us and you don't have it yet. 'Disposing of us' would be severely counter-productive on several fronts."

Dzudek sighed, or the Risi equivalent. "Professor Burnside, your speculation is correct that we are not of Earth, but I'm afraid that I can't admit much more than that. We operate under the strictest orders, the most rigid regulations concerning interference with the normal development of societies with which we come in contact. I must ask you both to promise that none of this will ever leave the room."

"Why are you here?" Spencer asked.

"Promise —" Dzudek pressed.

"Yes, of course, you have my word, and Professor Burnside's as well," Spencer agreed immediately. "Why are you here?"

"Your speculation was correct: we are stranded. We were on a survey mission mapping this segment of the galaxy when our main ship suffered a massive engine failure. The vehicles you saw in 'K' are merely shuttles. Their range is quite limited. They can take us from the surface to our ship, but that is a wasted trip."

"Your ship is intact?" Burnside asked gleefully.

"Everything works except the engines," 'Venda offered.

"—and you can't fix the engines?" Spencer asked.

"The parts that failed were built using a proprietary technology which the manufacturer has declined to reveal," 'Venda admitted. "We have only the vaguest idea of how they work, and no idea why they failed."

"—and you're looking for clues in someone else's technology that might point the way toward a solution to the problem of your failed engines," Spencer finished 'Venda's sentence.

"Briefly, yes," 'Venda admitted, "but we've about given up on your technology. In the areas of Inertial Damping and Inertial Pumping, you are where we were 600 to 900 of your years ago. Curiously, you seem to have made remarkable progress in other areas —"

"Such as?" Burnside prompted.

"Medicine, for one," 'Venda offered. "The range of chemical and biological substances you have available to medical personnel is truly astounding, and surgical practice is almost the equal of ours. Physics is another: we produce micro-machines as does your technology, but we developed the techniques more as an offshoot of philosophy than pragmatically as you did. Your scientists actually manipulate individual atoms, suggesting that one day you may build micro-machines small enough to do maintenance on ours. Oddly, no one in your Physics community seems to think this is remarkable. What we think is remarkable is that you can do things like that and have never tried to manipulate Inertia."

"'Venda!" Irina Dzudek stopped him. "You're violating the Prime Directive! Say nothing more."

"It's too late, Captain Dzudek," Burnside brushed her objection aside. "That cat is out of the bag. We already suspected that might be key to what we were supposed to do here. And while manipulating inertia may be beyond our technology, you have hit 'The Big Time' by picking the location you did. You have stumbled onto a nation of tinkerers. We may not understand how they operate, but I can virtually guarantee that somewhere in this land lives someone who can fix your engines." He held out his hand. "If you'd like our help finding someone to do that, we have to share something of a deeper relationship, Captain Dzudek. We have to be partners."

Dzudek shrugged. "Professor Burnside, even a ship's Captain dares not make that decision alone. I shall have to consult with my senior staff before I can give you an answer. You are, by the way, correct. We are here as explorers, not conquerors. And if we had done our job properly, you would never have known we even visited this system. I will give you my answer after dinner tonight. Until then, you are confined to quarters. Might as well mitigate what damages we can."

—==++++==—

Someone knocked at the door. Spencer Carson opened it and found himself staring into Janet Mar's deep brown eyes.

"Since you won't be dining with the rest tonight, I've been asked to find out what you would like to eat and to bring it to you. Do you know what you would like for dinner?" Janet asked them.

Spencer Carson smiled. "Your presence."

"You need to eat something, Doctor," Janet insisted. She turned to the other. "Professor Burnside, can I bring something for you? Cook says he will be glad to make anything you want."

"I agree with Spencer," Burnside teased. "If you won't join us for dinner, then I don't want anything."

"Very well," Janet surrendered. "The three of us will dine together. Now may I tell cook what to prepare for you?"

The men ordered steaks and Janet ordered 'something to remind her of home' which turned out to be a semi-liquid whose consistency was on the order of loose chocolate pudding. This she ate with a spoon. Spencer and Professor Burnside both sampled it and decided that they had never encountered anything so devoid of taste in their lives thus far. Compared to what Janet described as 'the best idridyay I've ever had', even water was a feast for the senses. Janet, in turn, stole a few of their french-fried potatoes.

"What will happen to us?" Spencer asked her.

Janet gave every impression of being on a mood-elevating drug. Interspersed with snickers and giggles, she told them: "I heard that Captain has called a plenary ship's council — all the command officers — for this evening to decide what to do with you. She says she doesn't have the authority, but I think that part of it may be that she doesn't want sole responsibility for either of the unpleasant choices that might be made."

"—And those are?" Burnside prompted.

"Well, we already have at least one violation of the Prime Directive," Janet began, "and there are two routes I can see from there: one, they may decide to scrub your memory clean of your experiences here. That doesn't always work. In fact, it often leaves

the subjects in what you call 'a vegetative state'." She could barely suppress a laugh, but continued: "Two, they could decide to really go for a major violation of the Prime Directive and take you into our complete confidence. I don't think the captain will go for that, but there's some sentiment for it because you said you may be able to restart Aguila Proesti's engines. Can you really do that?"

Spencer handed her another french-fry. "Yes," he answered, "I think we can." She waved the crispy potato under her nose and doubled over with laughter. "What's so funny?" he asked, but she couldn't answer.

When she was able to compose herself, she told him: "I don't think it's funny at all. I don't want to be stranded here forever, so I hope you can help us get home. It would be a terrible shame if the council decides to purge your memories without even allowing you the chance to prove what you say, but we can't let you walk away from here with the knowledge you have, regardless of how you came by it," at which point she collapsed back into the couch, laughing hysterically.

—==++++==—

"Do we need to make this formal?" Dzudek asked. They all shook their heads. "Alright, then, let's get on with it.

"You've been called here because I, as Captain, do not have the authority to make the kind of decision I am being asked to make. This meeting constitutes a plenary ship's council under Article Four of Naval Regulations. As background, I ask Chief Engineer 'Venda Alxzandr to rise and address you on the events leading up to this council. 'Venda?"

'Venda Alxzandr stood to speak. "Last night, our guests broke into most of the utility buildings in the complex. Inside building 'K' they discovered the two shuttles and determined them (and therefore us) to be of extra-terrestrial origin. This afternoon during one of our lab discussions, they lured one of the younger engineers into a carefully crafted trap: Professor Burnside admitted that much. Derinn Talaar, instead of letting them push a faulty logical line to its inevitable paradox, re-worked the problem on his computepad, which device Professor Burnside found most interesting. They knew we were extra-terrestrials. There was no value in pretending otherwise any longer.

"They have offered to assist us in repairing the ship's engines —" One of the officers snorted. "—claiming that they have the ability to fix even that which they do not understand —"

"That's outlandish," offered the head of Stellar Cartography.

"I agree," 'Venda told him, "but this is an amazing group of people. Emmon Mar has been doing an in-depth analysis of technological proficiency. Let's hear what he has to say. Emmon?"

Emmon Mar faced the group. "The Terrans (that's their own word for themselves) are a cultural anomaly as far as our civilization would see them. In many ways they are noticeably very backward, speaking in a strictly technological sense. In other ways they are quite advanced. In the area of Field Manipulation, they are perhaps 600 years behind us, in Medical Arts almost our equals (and well ahead of us in Pharmacology), in Atomic Physics they can teach us a few tricks. They have, for instance, learned to move — I mean 'physically' — atomic field conglomerates, and they do it without any knowledge whatsoever of Field Dynamics.

"By their estimation, they have been civilized (that is, living together amicably and planning for the future) about 10,000 years. When I say 'living together amicably' I mean that at any geographic spot on the planet there were long peaceful stretches punctuated by the occasional war. There have been virtually no periods in their history when everyone was at peace simultaneously. Until about a hundred fifty years ago.

"About that time, this nation and several others developed a way to cause an uncontrolled fission reaction and its inevitable successor, the uncontrolled fusion reaction. There was a single nuclear incident, part of one of their wars, and that was the end of it except that for the next 150 years or so everyone worldwide was under severe stress wondering when the next use would happen. It never did. Near the end of that century, all the 'nuclear nations' came to understand that none of them could ever engage in an all-out war without endangering all life on the planet. It's been an uneasy peace, but it's been peace now for about ninety years, discounting the occasional revolution or border dispute. In that time period, their technological progress has been astounding.

"I said they were perhaps 600 years behind us. If we had visited this planet one hundred years ago, we would have said then that they were 2,000 years behind us. Their rate of technological progress is roughly three times what we're used to, and in the last fifty peaceful years it has gotten more intense, more rapid despite the fact (and this is the most amazing part) that virtually all research is now industrial rather than academic. Before the end of this century, if they keep progressing at the same rate, they will be teaching us things we never suspected about hyperspatial travel.

"Yes, we are in violation of the Prime Directive. We can take radical measures to mitigate damages, but I think that would constitute a grave error. I have no doubt that before we, unassisted, can get our engines back on line the people of this planet will have

advanced to the point that they will be invited to join the Galactic Congress. Taking them into our confidence will provide them with no advantage they won't already have developed independently in the foreseeable future.

"Do I believe they can fix that which they do not understand? No, I don't, but I believe that it won't take them long to develop an understanding that makes ours look very naïve, indeed. My recommendation is that we take Professor Burnside up on his offer to help. It may not do us any good, but if we don't we should plan to be stranded on this planet for a very long time." He sat down.

"Any other opinions?" Irina Dzudek asked. There were none. She conducted a quick poll of the assembled officers. "Then let the record show that this plenary council agrees to share information with the Terrans in exchange for their help repairing our ship."

Shortly, a security team arrived at the auditorium with Avram Burnside and Spencer Carson in tow. They were seated in the first row.

"Gentlemen, we've decided to call your bluff," Irina Dzudek informed them. "Your task here is to help us get our engines back on-line. You can take all the time you want, because you can't leave until you're done. You will need to resign your position at the university, Professor Burnside, unless you think you can complete this task before classes resume.

"Personally, I doubt you can do it at all, but the council has decided to give you the chance to try."

Burnside rose to respond. "You misunderstood me, Captain Dzudek, if you thought I said that I personally would fix your engines. I'm sure I only offered to help find the people who could do it." Irina Dzudek glanced toward 'Venda Alxzandr who nodded agreement. "If you are insisting that Dr. Carson and I do so alone, then you might as well go immediately to Plan B, because you are insisting on a virtual impossibility."

"—the people who could —'," 'Venda asked, "How many people might that be Professor Burnside?"

"I don't know, 'Venda," Burnside answered. "It might be quite a few. It's very hard for us to assess the magnitude of such an assignment when we have so little knowledge of what the problem might be. I said earlier that we would have to be in a very close partnership, but I apologize if that made you think we would be the only terrestrials involved. Oh, no. There will be several more, perhaps several dozen, possibly several hundred."

Emmon Mar interrupted Captain Dzudek before she could utter her surprise. "The situation has not changed, Captain, since we made our decision. Whether we are involved with two terrestrials or two hundred, it probably doesn't matter in the long run."

Irina Dzudek, looking surprised, turned to walk away. "Mr. Mar, you're in charge of these two. Do what's necessary."

—==+++==—

The upward leg was an education in itself. All the historical footage they had seen of launches always involved great expenditures of chemical energy, usually hydrogen-oxygen reactions, to push a vehicle into a vast arc terminating in a low-earth orbit, and there was indescribable noise from start to finish. The shuttle, in marked contrast, seemed remarkably quiet as it flashed through the atmosphere in an ever-steepening arc terminating in a vertical climb on a direct path toward Aguila Proesti.

Had the trip happened fifty years prior, had it happened even twenty years prior, alarms would have rung around the world. In 2105, nobody noticed, or if anyone did notice, they simply logged it as an interesting anomaly to be mentioned, if at all, in a note to the North American Journal of Astronomy. The shuttle, however, was too small to make much of an impression on an eye, and its heat-signature was minor. Its plasma-signature was something else entirely, and above 40 miles or so, left a very thin but detectable streak.

Radar would have picked it up, of course, had any been actively searching, but there were not. By 2087 most ancillary government functions had been abandoned, and few had been picked up by the private sector. By 2090 there wasn't a national army anywhere that exceeded 150,000 and their chartered functions were rigidly defensive. Armies of that size could not contemplate the invasion of a neighbor unless that neighbor were very small indeed, and committing enough troops for a convincing invasion of necessity leaves the home front weakened to the point of defenselessness. It was a very peaceful world, one in which thorough-going radar scans were unnecessary and therefore an insupportable luxury.

Even without benefit of hyperspatial engines, the shuttles could still, thanks to inertial suppression, develop impressive speed, typically between 0.02c and 0.03c. That put the asteroid belt a mere 10 hours from Earth. On the outbound trip, 'Venda Alxzandr, Petr Alioth, and Emmon Mar did what they could to give the two physicists a good grounding in hyperspatial propulsion: how it was thought to work, the major subsystems, and the great unknown: Matter-Antimatter Valving. The key to it all was inertial control. Without both inertial suppression and inertial enhancement, one system or another would become too unstable to maintain continuous operation and the entire environment would collapse. With inertial control, the dynamic imbalances of each subsystem could be played against one another in

a way that made faster-than-light travel possible. All that was required was to restart the matter-antimatter reactors.

The shuttle's onboard guidance and navigation equipment brought them astern of the pseudo-asteroid that now housed Aguila Proesti and the pilot handled the tricky maneuver that brought them inside and into view of the ship. As if by a pre-arranged signal, Aguila Proesti's exterior lights came on just at the right moment to deliver the maximum surprise to the newcomers. Carson gasped at the colossal size of the ship as the shuttlebay loomed before them like some giant mouth. Then the ship swallowed them.

—==+++==—

In the completely artificial environment within the ship, the days slipped by almost without being noticed. There was no night or day, yet the Terrans slipped easily into a 24-hour pattern following an initial period of 20-hour and 30-hour cycles. The colonists who were with them went as easily to a 27-hour cycle for some, and a 22-hour cycle for others. There seemed to be no easy way to predict who would be working with whom on any given day in the future.

The availability of food replicators throughout the ship meant that none of them ever got hungry enough to suggest "Let's break for lunch." Meals were always ad hoc and on-demand. It was the fourth or perhaps the fifth instance of someone remarking that he had overheard something relevant to the current problem that prompted Emmon Mar to insist that they eat all meals together. It was, he assured them, more profitable to chat about their work in the dining hall than to discover days later that the solution had already been found.

So it was that in late January of 2106 while they were all having either breakfast or lunch, depending on their schedules, that Emmon Mar asked whether it would be possible to adjust the replicators to reduce the concentration of iodine in the piridtsia, a dessert of which he was especially fond. 'Venda assured him it would be taken care of that day, and asked whether there were any other things anyone needed the replicators to do or not to do.

"Now that you mention it," Carson joked, "why don't you have it knock out a few spare MAMVs so we can take them Earthside and have them examined."

There was a noticeable pause while thought connected with thought in 'Venda's mind. "I could do that," he said. "Since we would copy from a non-working MAMV, they would also be non-working, but it could be done. Do you really think Earthside facilities would tell us anything?" and there followed another long pause while thought connected with thought in four other minds.

"Well," Carson continued distractedly, "I was just wondering what one of them would look like under an electron microscope."

'Venda looked at Emmon Mar and then back to the Terrans. "What's an 'electron microscope'?" he asked.

Carson looked at Burnside and then back to the colonists. "We'll explain on the way back. How many MAMVs are there in total?"

"Nine, three in each pod," 'Venda answered.

"Make a single copy of each valve and mark them to show where they came from," Burnside ordered. "Your ship is a marvel, but we're not accomplishing anything here. We can do more to solve your problem back on Earth."

Four hours later the shuttle poked its nose out of the make-believe crater of a make-believe asteroid and aimed for Earth.

12 - SMALLER

The phone rang on Anita Savimbe's desk and she picked it up never taking her eyes off the scan maps spread across her work table. "Savimbe."

Avram Burnside engaged her in small talk for a few minutes, catching up on the several years of events in their respective lives since she had taught at UNLV before getting down to business. "I have need of a scanning-tunneling-EM and someone who knows how to get results from it. The one at UNLV doesn't have the depth or the resolution I need. What do I do now?"

"Now, Avram," Anita Savimbe teased, "you already know that JPL has such a device, and it's certain you know I'm the someone who gets results from it. You want JPL to do you a favor, but they're going to want to know what they'll get out of it before they agree to any such thing. This is a '*quid pro quo*' world, you know. Who are you working with (or for) these days?"

"If you mean 'working for remuneration', the answer is 'nobody'," Burnside told her. "I'm on a temporary leave — unpaid — from UNLV working on a personal research project with some offshore visitors. It's not very heavily funded, so the only thing I can rationally offer JPL is that they will have an early look at the scans done on their equipment — and I won't have to go elsewhere with the same deal. Do you think they'll buy it?"

"Hard to tell, Avram," she answered. "Give me some more information about what we're going to be looking at."

"We'll be looking at nine examples of a control device for a propulsion system," Burnside explained. "I can't be more specific than that. I don't own the technology and I'm under severe restrictions regarding what I can and cannot divulge. JPL will certainly keep their own copies of the scans and what they do with them (within the law, of course) is their business. Shall I keep looking?"

"How much of a hurry are you in?" Anita asked.

"Very," Burnside admitted. "I know you can't allocate the EM without permission, but I need you to get back to me soon. My associates are capital-A anxious to get an inside look at these things."

"This isn't likely to get any of us thrown in jail for misappropriation of trade secrets, is it?" Anita asked warily.

"Don't worry, Anita," Burnside assured her. "They have full authority to do what they're asking. Nobody's going to jail." *To the stars, maybe*, the thought crossed his mind. "The worst that can

happen is that you *don't* go to the bank with what you learn." *There, if that doesn't set the hook, nothing will.*

"I'll be back to you soon," and she dropped the line.

—==++++==—

Burnside's Embraer touched down at the end of JPL's runway and taxied to the parking area that already contained three corporate jets. A station van was waiting to shuttle them to the office and lab area. Avram was disappointed but not surprised that Anita Savimbe was not there to greet them. She was, after all, a busy lady.

At the entrance of the lab area, Burnside, Carson, 'Venda Alxandr, and Petr Alioth were searched and scanned for dangerous materials and cameras and passed along to Anita Savimbe who led them into the microscopy area. There, she and two assistants prepared the mysterious devices for scanning. As the internal structure of the first device appeared on the viewscreen, Petr and 'Venda began taking notes on their computepads.

"What we really need to know, Dr. Savimbe," Petr began, "is in what way each of these devices differs from the others, if at all."

"You're suggesting that they will demonstrate microscopic variances from example to example." she offered.

"Yes, exactly," Petr agreed.

"I take it you do not have a paradigm, a perfect model," she probed.

"That is correct —"

"—and you would like to know, then, what that paradigm might look like." she finished.

Petr looked at 'Venda with an expression that clearly said *'That didn't take her long'*. "Yes," he answered her.

"Where did these come from, and what are they supposed to do?" Anita Savimbe demanded.

"Unfortunately, Dr. Savimbe," 'Venda began, "we are not privileged to divulge that information. All I can say is that these are failed parts of a larger device."

"This is almost certainly a silly question, but I have to ask it anyway," she prodded. "Why don't you simply order replacement parts from the manufacturer?"

"Not a silly question at all," 'Venda Alxandr assured her. "We have been unable to contact the manufacturer for some time now. We believe that repairing these parts or reconstructing new ones are presently our only realistic alternatives."

She turned to Burnside. "Avram, this has got to be illegal. If JPL winds up in court over this —"

Burnside raised his hands in protest. "Anita, I personally promise you that such a thing will not happen."

"Personal promise be damned, Avram," she retorted. "What good will your promise be when the manufacturer you have been unable to contact contacts JPL — through their attorneys? No. 'Misappropriation of Trade Secrets' can still get a managing director a trip to Leavenworth or Danbury. It's not going to be me, Avram. Raise my confidence level or find yourself another EM."

Avram Burnside looked at her with a look of consternation before turning to 'Venda Alxzandr and shaking his head. 'Venda Alxzandr motioned to the EM operator to retrieve the device from the observation area.

Seeing her bluff called was something of a shock to Anita Savimbe's system. She was sure Avram Burnside was holding something in reserve and she badly wanted it up front. Dr. Savimbe was not used to holding other than the upper hand, and was only just beginning to realize that was the case here. Then, too, she had always been able at UNLV to get Avram Burnside to handle any dirty assignment — most of them, anyway — that came her way. Had it been love? Infatuation? Gullibility? Or had it simply been Avram Burnside's good-hearted nature? She had never cared then, but thought it might now be a good time to start. She stepped in front of him as if to prevent his departure. "I want to help you, Avram, I really do. Just give me something I can defend myself with if this ever winds up in court —"

"I already told you that this will never see court, Anita, but you don't want to believe me," Burnside pushed her away. "You want to believe I'm trying to set you up, maybe play a practical joke on you. Maybe you think I'm paying you back for all the times you maneuvered me into covering for you on your faculty assignments. I'm not. I didn't fly all the way here for laughs. This is real, Anita, and for you it could be real business — could have been real business. You just tore up the map to the gold mine."

"Gold mine?" she gasped.

"Someday you will look back on this moment and wish for all the world you had made a different decision." Burnside turned to the others. "Let's go find another electron microscope."

Anita tugged on Avram's sleeve. "Avram, let's finish what you came here for."

"Not this way, Anita." he told her.

"No, we'll do it your way," she agreed.

"No more probing questions?"

"No more probing questions," she promised.

"No more obstructionism?"

"No more obstructionism." She hung her head, realizing at last that she had been beaten at her own game.

"No more games?"

"No more games." She shook her head.

"What do you say, 'Venda?'" Burnside asked.

"Avram, I want this task completed as quickly as possible," 'Venda told him. "If this is the place to do it, let's do it here."

Burnside handed the sample to the operator somewhat reluctantly. The operator loaded sample number two into the scanner area and refocused the beam.

—==++++==—

"Now, this is all from microscopic examination done without any real knowledge of what it is we're looking at or for —" She smirked in Avram's direction. "— so all of this is very speculative. You all understand that, right?" They all nodded agreement.

A side-by-side image of two of the units appeared on the auditorium screen. "Notice the coil-like assembly. The one on the left appears smooth, that on the right has this irregular crystalline appendage. Do we know what material the coil is made from?" Petr suggested it might be silver. "That would make sense. Silver, under the right conditions, can get very 'furry' down near the molecular level. We may be seeing some silver migration here. Seven of the nine units show this irregularity or a variation of it, and I speculate that it is not present in the paradigm. Next frame.

"The next series of images —" The visual began to change every six seconds. "— illustrates what are probably anomalous cracks in the substrate. That is, most of the samples are cracked and the cracks appear in different locations. I speculate that the paradigm is not cracked. Next frame —"

"Hold that frame, please," Spencer asked. "Dr. Savimbe, can you speculate on the cause or causes of the cracks?"

"Dr. Carson, we're looking at some very small structures," Anita Savimbe slipped into her 'lecturer' mode. "The substrate shown here is thinner than anything I have ever seen fabricated. 'Grown' is probably a more descriptive term for the manufacturing process: the structure you're seeing here is on the order of a few dozen molecules thick. These cracks could have been caused by breathing heavily on the device — literally. A sudden change in temperature of just a few degrees Centigrade is all that's needed when the subject is this finely machined. In fact, the heat of machining it may have been enough." She waited a few seconds to see if he had a follow-up question, then ordered "Next frame —"

"Here's a view through the core of the coil. This is a really good shot. The coil seems to have a bulge in this one spot, right around 7-o'clock. Every sample bulges in exactly the same spot. I'm torn between declaring it deliberate or coincidental. Given the smoothness of the rest of the coil, the obvious question is 'why here?' and urges me toward 'coincidental'. The lack of anything in the vicinity that exclaims 'a failure occurred nearby' means I have to mark this one 'designed this way'. Deliberate. Next frame.

"On this frame, we've ganged four end-on views. Knowing nothing about this device, I can still say for certain that the features shown here determine how the device is installed into whatever encloses it. When we see the next frame, we'll see several lateral striations that are probably caused by spring latches or tensioning assemblies. This tells me that the object we're looking at was slid into something that scratched it microscopically. Probably at the same time, some of the formerly-sharp corners became somewhat rounded. The rounding seems accidental. The paradigm probably had all corners originally crisp 90-degree angles and no scrapes on the lateral planes. The sharpness of the corners is probably not significant. Next frame.

"This is another four-up showing the four edges of sample — three. You can clearly see the marks of something that scarred the housing, probably as it was being inserted or removed. Some etching like this is visible on nearly all the samples. The housing, by the way, is very like Bakelite, a kind of high-temperature ceramoplastic used mostly in electrical applications. Next —"

"Hold that frame, please," Petr asked, and he rose from his seat and approached the screen. 'Venda followed him, and together they examined the scratch marks in detail, making comments to each other and asking questions in a near whisper so that none in the audience realized they had slipped back into their native language for this intimate chat. Petr traced several of the scratches with his scribe while 'Venda tapped on his computepad, recording Petr's commentary.

"Not all the samples show such well-defined scratches, do they?" 'Venda asked, knowing the answer already.

"Not all of them, no," Anita Savimbe responded. "Some of the scratch-areas are obscured by what I think may be silver migration. We saw that on the first frame."

"So, some scratch marks are hidden by other defects?" Petr asked.

Anita Savimbe took a few seconds to mull this over in her mind, then responded: "I can't guarantee that other defects actually hide scratches, no, but some of the defects on other samples may hide scratch marks. The probable silver-migration examples are at approximately the same location as the scratch marks here. It is a

very inviting conclusion for which we have no definite proof. All we can say is that the scratch-areas seem to be hidden by other defects."

"How far away from this scratch is that 7-o'clock bulge on the interior of the coil?" Petr asked.

Anita Savimbe looked down at her notes and diagrams, conferred briefly with the technician operating the equipment, and answered: "Ninety-four degrees."

"—And from this scratch?" Petr prodded.

"Dead-on," she answered.

Petr turned to Burnside and Carson with a quizzical look and Spencer explained "'Dead-on' means the bulge is directly behind the scratch."

"I think that may be significant, Doctor, don't you?" Petr prompted. She pursed her lips and nodded. "Do we have any information about the structure that forms the coil?"

"Only this: it's almost certainly a conduit, although for what I can't be certain," Anita Savimbe admitted. "The lumen is on the order of a few angstroms. There's not much that could fit through it. Beyond that, I think it would be very profitable to know how such a small structure could be assembled in economically viable quantities. I presume the 'why' of such a task is the heart of all off-limits topics."

"Quite so, Doctor." Petr leaned back to talk to 'Venda behind him and whispered: "She's too fast. She'll have us figured out in a matter of hours if we let her pump us. Let's get out of here before we're totally exposed."

'Venda nodded. "Agreed."

'Venda turned to Carson and Burnside and with his hand to the side of his face asked "Do we have what we came here to get?"

Burnside nodded. "I think we have everything we're going to get out of her equipment."

"Yes, but what a price!" Spencer added.

"What do you mean?" Burnside asked him.

"She knows."

"Not possible," Burnside countered, "there's nowhere near enough information available on just a few EM scans for her to draw any sort of conclusions."

"*Eppur si muove*," Carson quoted Gallileo. "Not enough for you, perhaps. She's already figured it out. Wanna' bet?"

"Ten bucks," Burnside responded.

"You're on." Spencer turned to Anita Savimbe. "Doctor, could we have a few words with you — alone?"

She thanked the technician quietly and the tech got up and left the five to themselves. Anita handed the digital ceramic recording containing all the scans to Burnside.

"Are you prepared to speculate, doctor, on the possible uses and applications for the devices you've scanned for us today?" Spencer asked her.

"That's been the number one question in my mind since we started looking at the first images," Anita admitted. "All of the possibilities that have been suggesting themselves throughout the afternoon have left me a little — I'm not sure what the word is — uncomfortable?"

"You're among friends here, doctor," Petr inserted. "Please don't feel uncomfortable. We'd like to hear your thoughts."

"Well, Avram told me this was a 'control device for a propulsion system', but I'm not sure I'm ready to believe that. Assuming for the moment that he spoke the truth, what function does this device serve? Directional control? I can't see anything that I recognize in that genre. Fuel delivery? That's the only other possibility, yet if a device this small is involved in fuel delivery, the fuel must be a very high energy source indeed. Fusion? We have some small experience with fusion power. This device isn't anything like you might find in a fusion experiment — it's too small to be of much value. If it's involved with fuel delivery, it provides unspeakably small quantities of something indescribably potent. I have suspicions as to what that might be, and I have some friends who will know."

"Doctor, this is all very confidential," 'Venda told her. "I thought you were aware of that before we started. This is not to be spread far and wide —"

"Oh, your scans are as safe as they can be," she assured him. "You needn't worry about this getting loose. JPL and I know the value of information when we see it." She smiled.

"Then what did you mean by 'I have some friends —'?" 'Venda asked.

Anita smirked. "Just that, in my line of work, I meet scientists from very many fields, including plasma physics. These nine devices? None of them could withstand sustained high temperatures without completely deforming, yet all but two of them have had high-energy — and probably high-heat — accidents. I'm guessing the other two had related accidents. Those devices live and work in plasma-land, I'd almost bet my career on it.

"Avram said they were part of a propulsion system. Well, what kind of propulsion system uses plasma? And where? You would need good vacuum and guaranteed containment, and then what would you do with the energy produced? Propel yourself where? Surely not transoceanic. You don't need anything like that kind of power for a trip to Australia. Inter-planetary — there's a possibility. Inter-stellar is another.

"If Avram was truthful that this is for a propulsion system, that system propels a space ship."

Spencer held out his hand and Avram Burnside dropped two five-dollar coins into it. Anita Savimbe's eyes watched the falling coins and she knew the meaning of the gesture. Her eyes flicked to Avram's before she realized that 'Venda Alxzandr was looking straight at her. Their eyes met and locked.

"Dr. Savimbe, you probably don't want to spread that speculation," 'Venda told her.

She tried to turn her head to look at Avram Burnside but she could not. "Am I in danger for having speculated?" she asked.

"Yes, you are," Spencer assured her. "You're in danger of becoming very rich, very powerful, and very important. You have already become very valuable." He addressed 'Venda Alxzandr: "Dr. Savimbe could probably profit from a vacation in Arizona, don't you agree?"

"That's up to Dr. Savimbe," 'Venda answered. He turned to her and extended his hand in farewell. "Should you ever decide you need to seek shelter among people who deeply appreciate your special talents, Doctor, PelauseLab would be pleased to have you as our guest."

She escorted them to the front entrance of the building, rode the station van with them to the airstrip, and watched their take-off. Then she returned to the lab, dumped the EM's log and images onto a spare optical disk, put the disk into a mailing envelope and dropped the envelope into the 'Outgoing' mail tray.

—==++++==—

The autopilot knew the way back to Prescott, communicating electronically with *en route* ground stations, making minute adjustments to the controls. The on-board computer in the Embraer also knew, because of its previous trip there, the layout of the airfield at PelauseLab, so there was no need this time, as there was last, to have a human pilot handle the landing. This left the four free to discuss the events of the day among themselves during the trip home.

"The key question," Burnside put it to them, "is 'do we know what a working MAMV looks like?'. That's also the easy question. The hard question is 'how do we reconstruct one?'. "

"I'm not sure we have a definitive picture of a working MAMV," Petr Alioth offered, "but the number of variations we might have to try has become very small indeed. Also, I think it's clear that the tensioning assembly within the valve housing is the culprit that has caused all this grief. Before we do anything about replacing the

valves, we have to solve the problem of how to prevent gouging the coil as the valve is inserted into the housing."

"Leave that to us," Spencer told him. "Virtually all of our industrial history has been a quest for abrasion prevention. A freshman engineering student who couldn't handle this would never become a sophomore."

"Then we're left with the problem of reconstructing new valves," Petr finished, "and I can think of only two ways to do that. 'Venda, do you have any thoughts on that?"

"The only method I think feasible is micro-adjustment of the replicator's parameters. We could cause the replicator, for instance, to build the coils out of platinum rather than silver. We could eliminate the interior bulge. We could —"

"How long would that take?" Burnside asked.

"Eight months — perhaps as long as a year," 'Venda speculated.

"I think there's a faster way," Petr Alioth insisted.

"I'll tell you how to do it really fast," Spencer offered. "Have the replicator build us a giant model of the valve, big enough to actually work on, and when it's hammered and polished and braced, have the replicator build one just like it the proper size."

"That's exactly the solution I propose," Petr agreed. "'Venda, can the replicators do that?"

'Venda Alxzandr was lost in thought for a moment. "We could turn the forward cargo bay into a replicator stage. Yes, I can do that."

—==++++==—

With the cargo doors swung wide, the contents of the forward cargobay were pushed into the vacuum beyond and braced with cables to prevent them floating away. In the empty space left there a trillion trillion energy fields coalesced to form an enormous replica of MAMV number seven, the least-damaged, as far as they could tell, example.

As soon as the transporter had finished its task, a team of engineers began theirs: bracing the structure to prevent it wandering in the low gravity of the cargobay and constructing scaffolding so that the workers could be close to the work without having to stand directly on the device.

'Venda crouched on the catwalk piercing the giant MAMV and examined the 7-o'clock bulge with Lya Tenai.

"It's pretty plain that this is the problem," Lya told him, "and I'm ready to hypothesize how it happened."

"Go on," 'Venda encouraged.

Lya pointed to a section of the coil with a scribe. "First, the outside of the pump coil is scored by something. Petr's probably right when he blames the spring tensioning assembly.

"Then, with the wall of the coil weakened and high-energy fields all around it, there is an episode of silver migration. This weakens the wall even further, and silver migration begins to occur on the inside of the conduit as well. We know that there is occlusion of the lumen in both places where we have evidence of external silver migration. Are you still with me?" Lya asked.

"I'm following you at a distance. Keep going," 'Venda told her.

"Chief Engineer! Don't look at me like that," she wailed accusingly. "I'm not crazy! I modeled this on the ship's computer and this is a very plausible explanation."

"Ensign Tenai, you have much more credibility with me than you may suspect," 'Venda told her. "That wasn't a look of disbelief! It was more a look of wonderment that you have been able to drive this investigation this far with such meager evidence. Please continue."

"Alright — occluded lumina ninety-four degrees apart. That's just short of 24 angstroms of travel on the centerline of the conduit. The first occlusion causes some of the plasma to squirt through at very high speed. Twenty-four angstroms later, it runs into another occlusion and turbulence occurs along with a substantial increase in pressure, probably on a scale of twenty or thirty femtobars. At typical plasma pressures, this is adequate to cause a stream to decohere, and that is significant, but the pressure itself is what causes the coil to deform. At twenty femtobars, the stream no longer has a 'scouring' effect, cleaning the conduit as it goes, and the pressure can no longer dissipate. The coil develops the characteristic 'bulge', and the bulge becomes a nexus for increased turbulence and increased back-pressure. The back-pressure on the plasma stream builds quickly — eight to twelve seconds is probably adequate — and that back-pressure allows the input port to close. The stream halts. Now the power input across the grid is unbalanced and the field collapses. Poof! Your engines are off-line. Something else happens, too. The sudden collapse of the field catches the other pumps still operating at full pressure, and in the time it takes for them to shut down some sort of minimal damage has to occur to them as well — cracked substrates, maybe? Eventually, all the pump coils and valves are damaged either by the original accident or by the results of subsequent plasma events. That's a worst-case scenario, of course. In lots of cases, the plasma stream will simply scour the lumen clean and the device keeps on pumping."

"So, how do we prevent it from happening again?" 'Venda asked.

Lya smiled. This was the best part as far as she was concerned: she got to advise the Chief Engineer. "Petr and Dr. Carson and I talked about this last night and this is what we recommend:

"First, we have to correct the defects on this one, after which the transporter will be used to map the device for the replicator. Second, we order the replicator to produce nine new MAMVs, then the transporter will be used to remove the old ones and insert the new ones. We will keep doing this until we find the configuration of the MAMVs that allows us to start the engines. Petr says there are only a dozen or so possible configurations, so we should be able to test them all within a few weeks.

"Petr wants my monitoring programs kept on-line at all times. If we ever detect a failure in a pump, any pump, our response has to be to replace all nine MAMVs at once."

"Then that's what we're going to do," 'Venda agreed. "You're in charge of the operation, Assistant Chief Tenai. Get us moving again."

"Sir, yes, sir."

—==++++==—

Working as a small team put Lya Tenai, Petr Alioth, Spencer Carson, Avram Burnside, and Janet Mar in constant contact with each other, and thus Lya and Petr finally managed to have their long-forgotten dinner date. True, there were five seated at table rather than just two. That just meant the range of topics could be wider. As a rule, 'business' was secondary to the casual conversation of five people who were by now fast friends.

"—and after I proposed your solution to him, Petr, he just said: 'You're in charge, Assistant Chief. Get us moving'. I have all the engineering staff on call. We start at change-of-shift."

"Congratulations," Petr offered her.

"For what?" Lya asked.

"Your promotion, of course," Petr chuckled.

"What pro —?" The morsel of food had stopped just short of her lips so she could ask the question, and midway through the question 'Venda's reference to her as 'Assistant Chief' finally rose to the surface of her consciousness. She put her fork down and was silent for a moment, her inward smile finally manifesting itself outwardly. "It's proper that you four are here for this. You, Professor Burnside and Dr. Carson, because you showed us how to see what we needed to see and put us on the road to a solution; you, Petr, for

figuring out what was happening inside the plasma pumps; and you, Janet, for giving me the knowledge I needed in order to put it all together for the Chief. You four have won this promotion for me to a much greater degree than I have contributed to it myself. I won't forget this. Thank you, all."

—==+++==—

All of the ship's engineers were pressed into service examining the structure for flaws no longer microscopic and repairing those they could identify.

Small robot maintenance machines crawled through the conduit scraping away irregularities and repairing the silver surface, smoothing it as they went. The '7-o'clock bulge' was excised and replaced with a refabricated section. Abrasions on the outer casing were filled with thermoplastic putty. Cracks in what was still barely more than a sheet of gossamer were repaired by adding connective sheets and fastening with glue.

The last step was to have the transporter 'read' the structure, reduce it to the proper scale, and pass the details of construction to the replicators that constructed nine new MAMVs identical, except for their size, to the one in the forward cargobay.

"Transmit," the duty engineer ordered. The matter-transporter dematerialized the configuration-D MAMVs and rematerialized a set of configuration-E's in their place. At stations all around the drivecore, engineers inspected the newly-installed devices and ran preliminary integrity checks to ensure that the installation had been done correctly. As soon as all stations reported 'ready', Lya took over.

"Unlock," she directed. "Flow two-tenths percent."

"—Flowing normally."

"Restart all systems," she ordered.

"—Ready."

"Flow twenty percent," she ordered as she peered at the main Engineering display.

"—All systems nominal," the duty engineer confirmed. Whistles and cheers filled the Engineering pod.

"Full flow," she commanded. "Bridge from Engineering: Captain Dzudek, you have a working drivecore, sir."

"Thank you, Assistant Chief," Dzudek replied, "please maintain readiness until further orders. Report any abnormalities immediately."

"Sir, yes, sir."

13 - HOMEWARD BOUND

Irina Dzudek was, frankly, disgusted by some of the things these Terrans included in their diet, but she was not about to precipitate an 'incident' with a potential ally over their personal habits. Still, she didn't have to like what they did, and protein is protein throughout the known universe.

"Chief Alxzandr informs me," she told them over dinner in the officers' mess, "that we can get under way whenever I order it. I suppose you and Dr. Carson will be returning to your academic pursuits when we depart."

"Actually," Burnside responded, in the most casual tone he could manage, "Dr. Carson and I felt that it would be profitable for both sides were we to accompany you. Besides the obvious benefit of cross-pollination by another technological society, Spencer and I are anxious to receive the accolades of your scientists for solving what to them may have been the insoluble problem," he winked at Spencer, "and the rewards your government will undoubtedly lavish upon us for returning a ship and crew that would otherwise be lost forever."

Lya Tenai had all she could do to suppress a laugh, for she was certain they were not seriously suggesting returning with them.

"We are returning to what you would call a 'war zone', Professor Burnside," Irina Dzudek noted dismissively. "I can't be responsible for you, and I'm sure you recognize the danger to my crew of having non-combatant passengers in such a situation. I will have Mr. Mar make arrangements to return you to the surface."

Burnside turned to face her. "Captain, when we agreed to help you fix your equipment, we talked about us becoming 'partners' in this endeavor. I don't know what the customs of your culture are in that respect, but in ours one does not treat ones' partners so imperiously, nor do partners make unilateral decisions for other partners. Dr. Carson and I feel we have earned the right to accompany Aguila Proesti home."

The smile drained from Lya Tenai's face as she realized they were serious.

It might not be so bad, Irina Dzudek thought. They might even return home to find that hostilities between the Gra and the Galactic Congress had ceased. The last news they had received, over a year ago, gave her hope that Kenjora may have been a more able commander than she gave him credit for.

"Further," Burnside continued, "you already have several non-combatant passengers — your academics. I can't see that having two more will make a noticeable difference.

"Further, if you return us to Earth you will be required, will you not, to erase our memories. Neither I nor Dr. Carson are ready to risk the more serious unintentional consequences of that. We see few other alternatives. In fact, we see none."

"Taking them with us would mitigate some of our liability for the liberties we have already taken with the Prime Directive," Emmon Mar offered, "while simultaneously preserving some valuable intellectual property. You could easily make a worse choice than agreeing to this, Captain."

"Very well, then," Dzudek agreed. "Gentlemen, how much time do you need to get ready?"

"We've been prepared to leave on a moment's notice since we returned from Tulsa," Spencer told her. "We're ready now."

Emmon Mar was put in charge of securing PelauseLab, which he did by setting up a trust agreement with Ben Stewart, their banker, to pay the taxes on the property from the interest on their savings accounts, and to provide minimal inspection, maintenance, and oversight.

Aguila Proesti, still inside its cocoon, performed a high-atmosphere fly-by in early April, 2106. As the ersatz asteroidal shell heated to incandescence attracting eyes from the surface, all the non-Terran equipment inventory was transported aboard. As soon as it was safely aboard, Aguila Proesti jumped to hyperspace, leaving its fragile shell behind to burn up harmlessly in its tumbling plunge through the thin air of Earth.

Burnside and Carson raced to see who first could get through Caparella's «Elementary Physics» which the computer had been able to translate almost completely from Risi to English. The Risi definition of 'physics' was much different than the Terran definition. For one thing, they seemed not to even have a concept of 'mass'. When a Risi physicist said 'mechanics', what he meant was 'interactions between mobile and immobile fields'. A fair number of the words in the translation still remained in the original Risi much to the consternation of them both. After hearing them complain how many terms were still mysteries to them, Lya Tenai assigned two of her senior engineers to help them on a rotating basis, and Fletcher Penta volunteered to do clean-up translation.

"It's actually quite difficult to find exact translations, especially in Physics, because our concepts are so radically different

than yours," Fletcher explained. "We each look at the physical world differently."

"How do you mean?" Burnside asked.

"Umm —" Fletcher started, "while we were listening to your communications broadcasts and trying to decipher their meaning, that provided a major stumbling block. We would constantly find ourselves asking 'What could that mean?' until someone suggested that you were not dealing directly with fields themselves, but with second-order manifestations — things like 'mass'."

"You don't deal with mass?" Burnside asked.

"There actually is no such thing," one of the engineers interrupted. "Oh, in the sense that there are 'shadows', there is 'mass', but you're not actually dealing with 'mass' and 'matter' and 'space'. It is one thing to say 'this set of fields has the characteristics we have designated as a carbon atom' and it is quite another to say 'this is a carbon atom'. The first statement is true; the second is false beyond it being a handy shorthand notation for the first.

"It is a fundamental tenet of Risi physics that matter does not exist. All that we and you perceive as matter is nothing more than fields interacting with each other. Your Terran physicists are just now coming to terms with that after — how long? — fifty years of being able to deal with individual atoms. At the level of the individual atom your otherwise practical definitions of matter, mass, and inertia tend to get extremely fuzzy and difficult to reconcile with the behaviors of those individual atoms. There's a reason for that: a single atom has no other external fields nearby with which to interact. It therefore exhibits only the characteristics you might expect from those fields you have named 'neutrons', 'protons', 'electrons', and the other sub-atomic fields — dispersion, alocality, amorphousness, fluidity, dynamic and instantaneous readjustment to changing conditions —

"The difference between our scientific cultures is that ours deals with the fields directly, where yours deals with the manifestations of the fields. Both methods are equally coherent, but there are limits to what you can do with shadows.

"One of those limits, suggested by the mathematical physicist Einstein early in your 20th century, is the speed of light. Now, it turns out that the speed of light is, in fact, constant throughout the universe under similar conditions. And it is, in fact, true that certain field characteristics seem to have a 'home state' which is why one atom of neon looks to you very much like any other atom of neon. But as soon as one starts to ask 'why does an atom of neon appear this way' one gains an entirely new perspective on some of the fundamental concepts of physics — mass, for instance.

"If matter does not exist, then mass does not exist except as a manifestation of some other thing. That 'other thing' turns out to be

a series of nexa that we call 'particles' and that we can still call 'particles' as long as we never forget that they are merely shadows on the wall. Once you recognize mass for what it is, you are well on your way to controlling it and its ever-present companion, inertia.

"If mass does not exist, then inertia, that basic property of mass, exists only insofar as we allow it to exist. In what you call an 'Einsteinian universe' it is not possible to drive a particle of matter to the speed of light because, as it approaches that limit its mass increases — appears to increase — to infinity, and Newtonian physics tells you that an infinite mass can be accelerated only by an infinite force. At that point, your physicists stopped looking for an alternative answer.

"What's actually happening is that as velocity increases, the interaction of field with field becomes more frequent and more energetic. Applying scalar energy to a field makes it stronger, thus more resistant. The affected field strengthens to accommodate whatever force you can apply. At some point — actually, just a hair beyond computed 'c', and that seems to be nothing more than coincidental — a field's strength can become momentarily infinite, forming an impenetrable, immovable barrier.

"If you're looking just at the second-order effects, what you call 'mass' and 'inertia', you see the apparent mass take a sharp swing upward as you approach 'c', but it's nothing more than resistant fields meeting resistant fields."

"—Which all sounds perfectly reasonable when you put it that way," Carson cut in. "The only question left is 'how do you prevent it?' It's clearly possible — we see it happening all around us. Nothing we've seen so far addresses the 'how' of avoiding field resistance."

"Field Dynamics' isn't an elementary topic even in Risi physics," Fletcher laughed. "You just haven't gotten to that chapter yet. Be patient and try to absorb the more elementary topics so that you'll be ready for it when you get to it," Fletcher advised them. "You've got me and two senior engineers standing by to help you over the rough spots. There's no reason for you to stumble your way through what must be — no pun intended — an alien landscape."

"Exactly," the second engineer cut in. "And don't hesitate to call for help when you think you need it. Your Terran physics recognizes only a few types of fields — electromagnetic, gravitational — are you aware of others? — so you are not prepared by your training to deal with the one hundred forty one types of fields recognized by our Physics curricula.

"And it takes a fair amount of training just to be able to recognize the presence of a particular field. The occupation of 'Field Dynamicist' is so specialized and requires so much training and constant interaction with others in the profession that a good FD has

time for practically nothing else. They are treated as well or better than your semi-mythical oriental potentates —" he turned to Fletcher to ask "is that a correct word?" Fletcher nodded and the engineer continued:

"Few of them ever take a life-partner. There simply isn't time for socialization and family development in a field that requires constant study, a lifetime of research, and virtually total concentration all the time. Who could live with such people in any case? But because what they do is so important to our culture they are treated with great deference. A constable would have to have substantial cause even to bother one with a question. Arresting one is almost a crime in itself."

"Sounds like a good position to be in," Spencer remarked, "Maybe I'll go into the field."

"Too late," Fletcher told him. "You should have made that decision before you started the university. But you can still study it." He winked at Carson and Burnside as the three Risi left.

"What's wrong with your eye?" the engineer asked Fletcher as they walked down the corridor.

"Nothing that I know of — oh, you mean this —" and Fletcher winked at him.

"Yes. What is that?"

"It's called a 'wink'," Fletcher explained. "It's part of a gestural vocabulary among the Terrans. It means several things depending on the context. In this context you might translate it as 'please don't think less of me for a cruel remark'."

"Oh."

14 - RENDEZVOUS

Eighteen days from Earth *en route* to the Home Worlds, the off-duty crew were roused from sleep by the warble of the alarms, but this time it was not Lya Tenai's drive-core monitors which had been silent since the introduction of the newly-modified MAMVs.

"Commander, ship approaching in hyperdrive," the duty watch advised Willi Gulassine.

"Red alert. Deflectors up. Stand by communications. Stand by VTs. Captain to the bridge."

Irina Dzudek was on her way to the bridge when the approaching ship was identified as the Galactic Congress frigate Rodina, Lieutenant Aloise Aliria commanding, and Aguila Proesti stood down from red alert. *A lieutenant, she wondered, commanding a frigate?*

After rendezvous and docking, the lieutenant, much junior to Dzudek's full-captain status, transported across with her first officer for a conference.

"I've never seen a lieutenant in command of a frigate before," Dzudek offered as an opening conversational gambit.

"Captain Erallerie was killed in our last engagement," Lieutenant Aliria explained. "His last order was to flee for the safety of the ship and crew. I'm carrying out that order. It may be good advice for you, as well, Captain Dzudek. A survey ship is no match for a Gra warship and several may be in pursuit. We barely survived our last encounter as you can see from the damage to Rodina. A few more direct hits and we would have been finished."

"The Gra are on the offensive again?" Dzudek asked incredulously.

"Where have you been, Captain?" Aliria asked. "We've been fighting a rear-guard action, Galactic Congress forces in near full retreat since the destruction of Piraeus and Pelause."

Irina Dzudek wore a look of stunned disbelief on her face. "Red alert, Willi. Lieutenant, what is the readiness of your ship?"

Aliria's expression fell. "Sir, we have full drive, deflectors are fully operational, and our blasters are capable of all but sustained fire. Our 'injured' list is getting shorter by the day, but we have lost many crew permanently."

"Torpedoes?" Dzudek probed.

"Sir, we haven't seen a torpedo in two months except for those inbound from Gra forces," Aliria whined. "I don't suppose you have any?"

"As a matter of fact, lieutenant, we have several hundred and we can make more."

A flash of hope crossed Aliria's face and was gone as quickly as it arrived. "You're a non-combatant! How —?"

"Never mind that," Dzudek brushed her aside. "'Venda, start constructing VTs as fast as you can. I want Rodina reloaded as soon as possible. Get Petr Alioth to look at Rodina's blasters if you need him. I want them repaired if possible. Have Chief Tenai look over their drives, too. Now that we know how, maybe we can refit them for pumped plasma. Download Rodina's communications intercepts. Have Fletcher Penta check them for idiomatics. Go."

'Venda left the room to start his tasks, and the interrogation of Lieutenant Aliria began:

"Lieutenant, we left Relasta Commara on CGT 164407 and were 127 days into our mission schedule when we lost communications with GEHQ," Dzudek filled Aliria in on their timeline. "We thought our equipment had failed, but we couldn't find anything wrong with it. Fill us in on the details."

Aloise Aliria began her narrative: "What I know is from dispatches through CGT 164534 and from rumor after that.

"The Gra continued to attack our outlying assets using a hit-and-run technique. We heard rumors that they were negotiating with the Federation, but you couldn't tell from their actions. Gradually, our forces became spread very thin along our borders as we tried to anticipate their next moves and make it more difficult for them to make any gains. On CGT 164532, a large Gra force attacked Brussine. It was thought then that this may have been their big push. Most of our warships responded to the attack on Brussine —" Irina Dzudek shook her head in disbelief. "— and they were assembled there and unable to respond when the Gra launched massive attacks on Piraeus and Pelause almost simultaneously. Both planets were reduced to cinders. Sir, Fleet Headquarters is gone and so is Galactic Ephemeris HQ. The Gra must have spent every last coin to fund that attack, and it was worth it. With Fleet HQ and GEHQ both gone and their communications nets with them, we're reduced to ship-to-ship communications. We can't coordinate a substantial attack on anything, we're reduced to tactics-only, and all we can do is defend."

"What of the 23rd Rangers?" Dzudek asked.

"Sir, it's been almost six months since I heard anything about the 23rd," Aliria responded. "There aren't many units still intact. Some have completely disappeared. Why do you ask about — Oh!" she caught her breath, "you're the Mad—" She stopped in mid-word.

"I'm not offended by the term, Lieutenant," Dzudek told her. "Yes, I'm the Madwoman of Piraeus."

"Well, sir, I think they were sorry not to have you around when the end came," Aliria consoled her.

"The end?" Dzudek faced Aliria directly. "Lieutenant, this is not over."

"Sir —" Aliria looked confused. "You can't mean to contest the Gra victory with just two ships, one of them barely armed."

"Contest it?" Dzudek scoffed. "Of course not," Dzudek put her hand on the young lieutenant's shoulder. "I intend to undo it."

"Lieutenant Aliria?" She stopped and turned to see who had called to her. "I wouldn't be surprised to find that you didn't remember me —"

"Mr. Penta, isn't it?" Aliria asked, "I thought I recognized that name when Captain Dzudek spoke it. So this is where you wound up! I have to say, you picked the right spot to be in when the Gra attacked. What put you aboard Aguila Proesti?"

"I'm a linguist," Fletcher explained. "GETG always tries to fit in a linguist when they go exploring new territory. Now I'm scanning your communication intercepts for information that might have been missed by the usual translator programs. I've found some interesting stuff, too."

"Oh? Like what?" Aliria asked, genuinely interested.

"The Gra High Command's latest policy directives are being handled by a method the local commanders refer to as '*revt-chiri-lak*'," Fletcher told her.

"I don't understand Gra. What does it mean?"

"I don't know either," Fletcher admitted. "'*Revt-chiri-lak*' is a slang expression for — we don't have any expressions or practices that quite fit the context — they bind their bodies to make it difficult to eat big meals. It's supposed to make them live longer."

"Curious, not to mention 'incredible'."

"I'm sure we'll be amused or surprised (or both) when we finally figure it out. Lieutenant, do you have any news about Teresa?"

"Your home? Teresa has been lucky so far. It's so far out of the main shipping channels that — you'll forgive me, I'm sure — no one pays much attention to it. That includes the Gra. Bringing you up-to-date on all the news will take some time, 'though. Do you have dinner plans tonight, Mr. Penta?"

"None. And call me 'Fletcher', please."

"Thank you, Fletcher. I regret I cannot extend the same courtesy to you. Circumstances... Would you dine with me and my staff aboard Rodina tonight?"

"2-starboard-50?"

"Come across anytime. You have the run of my ship."

—==+++==—

The multi-day process of teaching a replicator how to compose an object was, for Rodina, reduced to a simple matter of acquiring the programming from Aguila Proesti. Other than the Jepperson sub-micro MAMVs, all the differences between a standard drive-core and a pumped-plasma unit were macroscopic, so converting from one to the other was solidly inside the performance envelope of a well-equipped machine shop such as one might find on a warship. Now that Rodina's replicators knew the pattern for the MAMVs, it too could be a pumped-plasma ship.

Because Rodina was already fitted with launch ramps for full-size VTs, Petr scaled up his design to build what would be the most powerful devices Rodina had ever carried, 400-kilo VTs capable of delivering a 45ngKe-to-1 punch. Captain Dzudek had already ordered the jettisoning of the telescopes that cluttered the forward torpedo bay and engineers were reconstructing, in some cases from memory, the launchers that, as far as she was concerned, should always have been there. Soon, there would be two warships.

All of Petr's mini-VTs that had been configured to search out Gra warships were sent on their way toward the Home Worlds. Although their 30-kilo size would not permit them, singly, to do significant damage to a warship, a cluster of six or seven arriving within a few seconds would certainly bring a ship's deflectors down at least temporarily. Physically, too, they were near the limit of detectability. Unless their power signature were detected independently, they might impact on their target completely without warning.

—==+++==—

For most of the crew, meals were eaten on-the-run, but Avram and Spencer, Janet, Petr and Lya still made special efforts to be at the same place at about the same time when dinnertime rolled around. That place happened to be the little-used off-duty mess.

Two aliens, two academics, and a Navy officer meant that the range of conversation was essentially unlimited. For Avram and Spencer, the experience of being surrounded by technology a millennium ahead of their own was a source of constant wonder, yet the Terrans' ability to go straight to the heart of a problem with characteristically non-linear thinking that delivered a whole series of off-beat solutions simply amazed their hosts. They began to appreciate Emmon Mar's appraisal of the Terrans' ability to make technology jumps their own culture would never even have thought possible. Then, too, the stories Petr Alioth recounted of Anita Savimbe going from zero knowledge to just short of the point where she might

have postulated some of the fundamentals of hyperdrive mechanics merely on the basis of seven hours exposure to one (admittedly critical) example of the hardware made them all wonder whether they might not have stumbled across the next culture to take control of the known universe.

Lya's presence in the group meant that any innovative solution to a nagging problem found its way into the proper ear in, at most, two steps: Lya to 'Venda; 'Venda to the concerned department-head. After the first few radical improvements were identified as having emanated from one particular table in the off-duty mess, Willi Gulassine started 'dropping by' from time-to-time and with increasing frequency until he became a de-facto member of the group.

He it was who first pointed out that battleships are easier to defend than smaller ships because they carry their own fighter squadrons and can deploy these at a great distance from themselves as a picket-line to sieve out a vast amount of the mid-range weaponry. What's left is either big enough to be a target for the battleship's own weapons, or small enough to be deflected. "Too bad we can't do that, too," he finished.

"Why can't we?" Spencer asked.

"What would we send out, three shuttles?" Willi asked dismissively.

"Why not?" Spencer answered. "Three shuttles are better than nothing."

"No. They're exactly equivalent to 'nothing'," Willi countered. "They don't have the speed to intercept inbound ordnance. They don't even have the speed to get out of the way of inbound ordnance. They'd all be destroyed in the first engagement."

"Don't they have deflectors?" Spencer asked.

"Of course," Willi confirmed, "but their deflectors are adequate merely for pushing aside the stray meteorite. For deflecting energetics you need a real drive-core."

"I still don't see the problem," Spencer pressed him. "We know how to build a drive-core. We refitted Rodina in a few days. How difficult would it be to reconfigure the power train for a shuttle?"

"What are you going to power it with, Spencer?" Willi was becoming annoyed at the naïveté of this Terran. "The amount of antimatter that's required as a maintenance base is huge even though the consumption is small. Aguila Proesti doesn't carry enough spare antimatter fuel to initiate a drive-core on even one of the shuttles."

Petr and Lya looked at each other and said almost simultaneously: "The monitors!" and they got up and left the room, leaving their meals partially finished. The main topic of conversation switched at that point to 'the odd behavior of Petr and Lya' and was

still warming up when the two returned smiling broadly and carrying printed excerpts from the logs Lya's monitors had been accumulating, now, for over a year.

"Commander," Petr announced, "I think we can locate enough antimatter to start a few more drive-cores."

"Really? Good. How many?" Willi prompted.

"Rough estimate — sixty," Petr mused, "— eighty if we're careful how we harvest it."

Janet cocked her head and leaned in to ask: "Did you say 'eighty'?"

"Yes," Petr confirmed. "It's a guess, of course. I could be off by a factor of two or three either way, but this is how my estimate came out: approximately four-and-a-half kilos of antimatter per application as a maintenance base against what we think may be" — he flipped through the printed report — "between three hundred and four hundred kilos of antimatter in two pockets and seven veins along our outbound and inbound routes. There's more, of course. These scans cover, at most, a corridor two hundred thousand kilometers wide. Once we locate the position where these readings were taken, we should be able to cruise through the area, harvesting as we go. Beyond doubt, there's enough antimatter out there to enable us to start a drive-core on any vessel large enough to accommodate the equipment."

—==+++==—

Rodina and Aguila Proesti dropped out of hyperspace within a few hundred kilometers of each other, exchanged the formalities of arrival and began their agreed-upon search patterns. The exact location of the readings Lya's monitors had made was imprecise at best. Irina Dzudek thought she might have to scan a volume twenty million kilometers on an edge, eight thousand trillion trillion cubic kilometers, and expected to spend upwards of a month doing it even with the assistance of Rodina.

On the advice of Emmon Mar, the search pattern was altered to scan the surface of the enclosing sphere, reducing the scope of the search by several dozen orders of magnitude. In retrospect, had Emmon Mar not made that suggestion or had it not been given due consideration, things might have worked out far differently.

As it turned out, a shuttle from Rodina found the first evidence of an antimatter string four days into the search and was joined by Rodina herself reporting evidence of a second string only hours later. The other vessels continued their search patterns until the first discoveries could be mapped and some educated guesses could be made as to where the strings might lead. In the day and a

half it took to establish an orientation for the newly-found 'ore', Aguila Proesti located a third string. The other vessels were reassigned to areas of the sphere's surface where Rodina's strings might be expected to exit. In the process of chasing one of the strings, Rodina discovered the first 'pocket' and all vessels converged on that spot to begin mining it for its treasures.

The 11-day trip from where Aguila Proesti encountered Rodina had provided enough time for engineers on both vessels to construct containment shells for all of the shuttles. All that was missing by the time they dropped out of hyperspace was enough antimatter to make their efforts worthwhile.

Now, they had more antimatter than they could store. They could afford to run their deflectors on every ship at maximum with no fear of running short of power. Before day's end, Aguila Proesti's three shuttles and Rodina's five were all hyperdrive-capable, each loaded with 20 of Petr's compact vacuum torpedoes, each torpedo antimatter-tipped, each one capable of stressing the deflectors of all but the largest Gra warships or crippling an unprotected ship. The 400-kilo torpedoes hefted by Aguila Proesti and Rodina now carried such a killing punch — two delivered in rapid succession would certainly burn out the most powerful deflector generators in the Gra fleet — that the only reasonable response from the Gra must be total avoidance: step aside or die.

—==+++==—

"These are the 'Rules of Engagement'," Irina Dzudek addressed them. "First, you are to protect your ship and your crew. Secondly, you are to cripple, if possible, or destroy, if necessary, as many Gra ships and crew as possible by any means possible, while minimizing the threat to your ship and crew. Thirdly, you are to recover, whenever possible, Congress warships that may have fallen into the hands of the Gra.

"In times past, I would have ordered you, in engagements with an enemy, to maintain a maximum rate of fire until answering fire was suppressed to zero. That was in the time when Naval Depots could be counted upon to be close-by and well-stocked with sufficient ordnance that no one worried about running short. That is no longer the case. In fact, there may be no Naval Depots left upon which we might call for protection, supplies, and repairs should one of our ships suffer serious damage. In other words, any damage you take may turn out to be lethal damage, so avoid it if at all possible.

"Spencer Carson will address you now on a tactic that we may be able to put to use. Mr. Carson —"

Spencer stepped up to the podium. "I'm not a military man, so I can't judge beforehand how useful what I'm about to say may be for you.

"For some weeks now, we have been discussing weapons and strategy and tactics, and, as always happens in an extended discussion, jargon creeps in. After hearing 'Venda Alxzandr many times refer to vacuum torpedoes as 'VTs', I recalled reading something from Earth — Terran history about a kind of warship used during the wars of the previous century. These ocean surface ships were called 'PT boats'. They were small and very fast and carried several naval torpedoes. Their method of attack was to use their high relative speed to bring them quite close to larger naval vessels, whereupon they would launch their ordnance from ranges so close they were virtually assured of success. After launch, they would turn and speed away out of danger.

"I mention this because I think your shuttles might serve in a similar capacity with only minor changes in the tactical approach.

"I should also mention that everything I've read on this subject (which isn't much) suggests this was quite a risky thing to do. Ship and crew mortality was substantial. On the other hand, the first time a new tactic is used the element of surprise often provides a substantial advantage, and this tactic appears not to be in your military formulary. You may one day find it useful."

—==++++==—

The destroyer/escort Coridasta dropped out of hyperspace, made for the nearest substantial solid body, and slipped behind it. The 40-kilometer wide rock would not hide them for long, but maybe it would be long enough. Within a few minutes, a Gra cruiser and two destroyers materialized from hyperspace and began a slow, methodical search pattern.

Aboard Coridasta, all power not used for maneuvering now went directly to the particle-emitters, none to life support, none to deflectors. With only three torpedoes left, Coridasta's position was hopeless in the face of a much-superior force, but the crew was overwhelmingly in favor of inflicting the maximum damage in exchange for their deaths. Her captain, therefore, had specified the cruiser as the prime target. If their sensors could still be believed, they would sight the cruiser first, before the destroyers could target them, and in the few moments when the battle would be one-to-one, Coridasta's arsenal would be emptied into the Gra cruiser, after which it would be an easy and defenseless target for the Gra destroyers.

"All stations report 'ready', Captain," the officer of the watch informed him.

"Very well. Shipwide: this is the captain speaking. I cannot express how proud I am of all of you for the way you have conducted yourselves through this trying time. Your courage, your resolution today will bring honor to you, to your ship, to me, and to the Rangers. All stations, stand by. Helm, take us in, maximum thrust."

Coridasta's engines pushed the ship into the open and onto a stage they did not expect. The Gra cruiser was being pelted by explosions from a source unknown. As they watched, the cruiser's deflectors collapsed.

"Full blasters, fire! Keep an eye peeled for the destroyers."

Coridasta's blasters cut away the cruiser's weapons array and fractured both main drive structures, leaving it to drift defenselessly. As Coridasta continued its path, the destroyers hove into view, first one, then the other. Each was being similarly harassed from an unknown source, one's deflectors were already down, and it was preparing to boost clear when it lost antimatter containment and vaporized. The second destroyer, deflectors almost down, managed to acquire boost and disappeared in a hyperspace blur.

"Can we chase it?" Coridasta's captain asked.

"No, sir. Insufficient fuel."

"What's the status of the cruiser?" he asked.

"No deflectors, no weapons, no drives, losing antimatter containment," his sensor tech reported. "They'll go nova in two minutes, max."

"Can we drain their antimatter?"

"Shouldn't be a problem," the FO offered. "None of their systems are preventing us doing whatever we want."

"Do it," the captain ordered.

Coridasta's transporter had seized no more than 60 grams of the Gra cruiser's antimatter before the next explosion splashed across the cruiser's power bridge and the entire structure blipped out of existence.

"Sixty grams," the captain, Feni Larossa, grouched. "It's not much, but it's better than nothing and it will get us clear of the Gra. Let's lick our wounds someplace else. What happened out there?"

"I have no idea, but there are dozens of small bodies swarming in the vicinity, just 'cruising', it looks like," the FO noted.

"Can you bring one aboard?" the captain asked.

"Sure."

"Do it. Then let's get out of here before the Gra come back to investigate."

"It's a small naval vacuum torpedo — masses about 30 kilos — obviously Navy standard-issue except for its size, and it has no inventory marks," Feni Larossa's twin and FO, Gavin Larossa reported.

"This was one of about forty or fifty still swarming in the area of the Gra warships when we boosted out. There were literally dozens of them surrounding us and we took zero hits, while the three Gra ships in the area were either destroyed or damaged. My guess? These things know what a Gra ship looks like or smells like or feels like or sounds like and rush to embrace them — with deadly consequences for the Gra. If there were still such a thing as a Congress Navy, I would guess they were the latest secret weapon. In the absence of the Congress Navy, I just thank whoever made them for making them. We're here because a hundred or two hundred of these things were where we needed them when we needed them. If there's another million of these cruising through space, the Gra are finished."

"—and the chances of that?" Feni asked him.

Gavin's face was glum. "Zero."

15 - A FAST SHIP

"It's your ship if you want it, Willi. I can give it to you."
Irina Dzudek knew Willi would make an excellent captain.

"Thank you, Captain, but I am exactly where I want to be. Your predecessor, Captain Ballasteros, eventually gave up trying to move me to another ship. He knew that the only reason I would leave was if he were unhappy with my performance, and he never was. I'm sure he toyed with the idea of giving me an unjustly-negative evaluation just so I would pay attention to my career prospects, but it's a fact that I love what I do and I do it well and I would probably not do as good a job elsewhere. Unless you phrase that as a direct order, I will consider it a compliment and stay right here as your much-appreciated first officer.

"Besides, Lieutenant Aliria seems to be doing a fine job in the center chair — I see no reason to reassign her to other duties."

"I simply can't have a lieutenant in charge of a frigate. That's all there is to it." Aloise Aliria sat stone-faced among the gaggle of officers, seven from Aguila Proesti and two from Rodina. "Therefore," Irina Dzudek continued, "you are promoted to Commander," at which Aliria's expression underwent a remarkable change. The next few minutes were spent offering Aliria congratulations as Captain Dzudek pinned the new rank on her uniform. But there was still business to be taken care of. "Attention to orders:

"Commander Aliria, you are to take Rodina via Teresa and Amarra, avoiding contact with the enemy if possible, performing reconnaissance in as much detail as possible, and rendezvous with Aguila Proesti at Glat in eight days.

"Aguila Proesti will travel via Pelause, Piraeus, and Ruel, and should arrive near Glat at about the same time you do.

"Along the way, our replicators will be busy turning out as many of the hunter-VTs as we can manage, and salting them along our route. I suggest you do the same. Commander Aliria, good luck. Get going."

"Sir, yes, sir."

—==+++==—

"Unidentified approaching to port," the sensor tech reported.

"Deflectors up. Condition red. Stay on course. Have we been scanned?"

"Not yet. Shall I initiate scan?"

"No," Aliria ordered. "Let's try for a visual — slow to lightspeed and lay in a new course away from Teresa. Be ready to jump at the first sign of trouble."

The other ship matched Rodina's course and speed, following her at a distance of 45,000 meters.

"We're being hailed — it's the Galactic Congress cruiser 'Girolais'. We're being scanned, too."

"Visual," Aliria ordered.

The image of Girolais' commander appeared on the view screen flanked by two Gra officers. "Rodina, heave to and prepare to be boarded."

"Girolais, what are your intentions?" Aliria asked.

"Rodina, you have been captured. Heave to or I shall have to open fire. You will not enjoy being fired upon by a Galactic Congress cruiser."

"From what I can see, Captain," Aliria responded, "Girolais is no longer a Galactic Congress ship. I offer you, in return, the opportunity to surrender your vessel to me. Lower your deflectors and take your weapons and communications array off-line."

In response, Girolais fired a single torpedo. This exploded against Rodina's stiffened aft deflectors, and was answered by two VTs from Rodina's much-upgraded arsenal. The first torpedo stressed Girolais' forward deflector generator to the breaking point and the second took it down. In the few seconds before the bridge crew realized what happened, Rodina's deflectors winked out of existence just long enough to allow a shot from her blasters to blow the outer bulkheads of Girolais' forward torpedo bay. The six crew members at that station were swept into space along with their two Gra overseers.

"Girolais, last chance," Aliria warned them. "Take your weapons off-line, take your sub-space communications array off-line, and indicate your readiness to surrender."

"Commander Aliria," her sensor tech informed her, "Girolais' remaining deflectors are coming down — power has been cut to the communications array —"

The full might of Girolais' power plant was pumped through the forward blasters and splashed across Rodina's deflectors which dropped to twenty percent efficiency before one more torpedo cut short the lives and careers of 470 of Girolais' crew and an unknown number of Gra.

Rodina briefly surveyed the debris, found no survivors, then turned and made for Teresa.

—==+++==—

A half-day from Pelause, Aguila Proesti picked up a weak distress call and took a small detour from their planned course to answer it. They found the merchant ship 'Empress of the Grass' adrift with a non-functional drivecore, its surviving crew all close to death.

When abandoned by the Gra, the antimatter in the drive-core had been confiscated and the ship and crew left to drift until some planet's gravity pulled any then living to their collective deaths. Aguila Proesti reloaded the Empress' core with adequate replacement mass from her now more-than-adequate reserves, and a crew from Engineering quickly brought it back into operation.

Irina Dzudek promptly recommissioned it as a warship of the Navy auxiliary. And this time she insisted that Willi Gulassine take the helm of the ship, and he did. For safety's sake, there had to be a Navy officer in command of this ship. During the re-fit, all of the programming that the replicators used for the manufacture of the MAMVs and the Alioth couplers needed for the naval vacuum torpedoes was spilled into the Empress' library. This was technology that could not be allowed to spread indiscriminately, and Willi Gulassine knew the importance of keeping it out of the hands of the Gra. Irina Dzudek knew that he would vaporize the ship and crew before letting that happen.

—==+++==—

Rodina stood down from hyperdrive late on the fifth day and her hails were answered almost immediately by the planetary authorities on Teresa. As she suspected, Teresa was too far out of the main trade routes to warrant much attention from the Gra (or anyone else) thus far. It had been, after all, less than a year since the destruction of the centers of power for the Home Worlds, and the Gra seemed to feel no particular rush to consolidate their holdings. Teresa had, therefore, been left alone (according to some) or cut off from civilization (according to others).

In an economic sense, one might hardly notice any change, since Teresa's economy was based on agriculture almost to the exclusion of anything else. Almost.

More to serve the Institute for the Advanced Study of Linguistics than for any other apparent purpose, Teresa had become 'the ears of the Galactic Congress'. Any plot of land that was not actively supporting biomass supported, instead, an antenna, an arrangement that had escaped the attention of a great many people, but not the Naval Intelligence Service. With few exceptions, generally limited to the remoter plants of communications equipment manufacturers, it could be truthfully said that anyone in the

communications business on Teresa actually worked for Naval Intelligence. The few for whom this was not true (industrial spies to the last man) lived their lives, even if they never suspected it, under a microscope.

Had the transmitting facilities on Teresa been even half as good as the receiving facilities, the Navy might never have noticed the loss of their main communications bases on Piraeus and Pelause, but they were not, and it did not seem likely that they would soon become so. That was not so much because their transmitters were so poor as that their receivers were so good. Even narrowcast transmissions were regularly intercepted by 'the ears' by the simple tactic of reverse-engineering their second-order and third-order effects. As a result, the volume of transmissions pouring into the planetary archives could only be described as 'phenomenal'. If it were broadcast (and sometimes even narrowcast) Teresa knew about it, and almost all of it had to be translated, primarily by the Institute's linguistic computers.

The Institute's faculty and students provided more than enough talent to handle those translations that could not be done by the computers. In the case of the Gra language, riddled with idiomatics, this was substantial. For the Gra, puns were an art-form, and even formal communications as between a headquarters and an outlying post were cluttered with apparently discontinuous semantic elements. Decipherment, therefore, called for artistry rather than mere technical proficiency: any old computer could do a literal translation and its value would be literally zero.

Thus, over the course of nearly a year, the several intelligence units on Teresa, some of whom did not know of the existence of the others, had amassed a substantial quantity of esoteric information about Gra operations. Not being able to do much in the way of spreading this information about, most had simply catalogued it against the day it might become useful, valuable, or both.

That day and the frigate Rodina arrived together. The communications between Rodina and the Stewards of Teresa ought to have been secure and would have been on any other planet. On Teresa there was no such thing as 'a secure channel'. Mere moments after it berthed at the geosynchronous transit station serving the planetary capital, everyone in the intelligence community planet-side knew that one of the surviving Navy warships had taken a position in orbit and was making arrangements for reprovisioning.

When most of the official 'chatter' had died down and ordinary ship-to-shore transmissions were opened, citizens were able to send to Rodina personal messages for re-transmission should Rodina ever find itself in the vicinity of the recipients.

Among the messages coming up from planet-side was a personal message for Commander Aliria from the ranking Naval

Intelligence officer offering to transfer to Rodina's databanks what information they had gathered. This offer she gratefully accepted and the uploads began immediately.

"Have you come across a Gra phrase: '*revt-chiri-lak*'?" Aliria asked as the collected wisdom of Teresa poured into Rodina's memory.

"I can't recall anything about that particular phrase. You should probably ask at the Institute," her Naval Intelligence contact advised.

"Thanks, I will."

Inquiring at the Institute, she was told: "You want to speak to Dr. Demaris," and was connected to their most experienced speaker of Gra.

"*Revt-chiri-lak*,'" Demaris mulled the phrase. "Where did you hear this?"

"A linguist of my acquaintance — I met him here at Teresa — suggested this might be an important phrase to translate."

"—and your acquaintance's name?" Otho Demaris prompted.

"Fletcher Penta."

"Ah, dear Fletcher," Demaris gushed. "It has been over a year since Fletcher went off on his adventure. How is he?"

"When I saw him last, he was doing very well," Aliria assured him. "I'm sure that if he knew we would be stopping here he would have sent his kindest regards. As to this phrase, '*revt-chiri-lak*', Fletcher indicated it was slang for some sort of ritual diet procedure, but didn't go further than that. Perhaps you can elaborate?"

"A diet? My dear, the Gra do not diet, they consume," Demaris explained in his most professorial manner. "'*Revt-chiri-lak*' is difficult to translate because we have no practice even vaguely similar. The Gra bind their bodies in ways that make it difficult or impossible to eat large meals or, indeed, meals of any substance whatsoever. The literal translation of the phrase is something like 'tomorrow, food will taste better', but that's very rough, you understand. They literally starve themselves into a state of hysteria — some of them will die of starvation during the attempt — after which they unbind their bodies and make up for all the eating they didn't do during the — I think it's thirty-seven days — of their fast. It is a ritual of binge-eating that kills the weakest of the Gra, either through starvation during the fast or via other means during the orgy that follows.

"Why would Fletcher have thought such a bizarre notion worthy of explication, I wonder?"

"Fletcher said the local field commanders were using the phrase to describe policy directives from U-Gra," Aliria commented.

"Oh, dear," was all Otho Demaris could muster in reply. "We've come across the term in dispatches we've translated for some of the listening posts, but none of us ever connected its use to the

actual conduct of the war. We always presumed it was a form of complaint from those who have to prosecute the war about the typically inane instructions coming from those who don't. If the Gra High Command is deliberately promoting *'revt-chiri-lak'* as a war policy, I'm afraid we are in for some rough times ahead."

"What do you mean?" Aliria pressed.

"All Gra patrol activity over the past several weeks has been by single ships," Demaris explained.

"Oh, dear," she echoed his sentiment. "Please excuse me, now, Doctor. I have work that will not wait."

In an instant, she was reconnected to her planet-side contact in Fleet Intelligence. "Have you, by any chance, a concise list of those Galactic Congress ships that have been suborned by the Gra?"

"Yes," he confirmed. "That was included in the material uploaded to your databanks. It also includes a short summary on the two Gra ships captured by Galactic Congress forces, although that information is old enough, by now, to be obsolete."

"Do you have current information on the probable location of the two Gra ships in Galactic Congress hands?"

"That should be part of the summary information."

"Good. Rodina will be departing momentarily," Aliria informed him. "It's important that you warn any remnants of the Navy to keep a very low profile for the next several weeks. The Gra are about to launch an offensive whose magnitude will probably be quite impressive. You are in great danger and there is little any of us can do to fend it off. The information you have provided — please know this — is of inestimable value to us, and we will not let it go to waste. You have done a very great service for the Galactic Congress, but our forces are too little to protect you from the wave of war that I fear is about to engulf you. With the data you have supplied, we may be able to annoy and harass the Gra enough to deflect a little of its force, but you must be prepared for the worst. Thank you for being here when we needed you most."

"Fair winds, calm seas, fare well, Rodina," the Fleet Intelligence officer wished her.

Thrusters pushed Rodina clear of GTS-2 and as she angled toward Amarra her hyperdrive came online and she simply disappeared into the void.

Standing down from hyperdrive was always, in wartime, followed immediately by a broad-band scan for potential enemy vessels. Amarra was nearly as far out of the main stream of traffic as was Teresa, so the automatic red-alert the sensor system called on discovering a Gra ship berthed at Amarra's GTS-5 was disappointing, but not unexpected. Rodina's forward torpedo bay had three VTs

locked-on and ready to fire before the light cruiser Tu-Amak had cleared the framework of the spacedock. Rodina's hails were answered by the image of a Captain of the 20th Rangers: "Hold your fire," he ordered, "this is a Galactic Congress ship."

"Captain, you will pardon me, I am sure, if I insist on a boarding party," Aliria brushed him off. "At least you will have the assurance then that we may hesitate a moment before dispatching you. Drop your deflectors, take your weapons and communications array offline."

Obediently, Tu-Amak's deflectors fell and power was cut to the other systems. Eight boarding parties transported into Tu-Amak at random places and each signaled that they were safe after completing a quick inspection.

"Really, Commander Aliria, had we truly been a Gra ship you would already have been destroyed. Your defenses are no match for the weapons we carry, even on this decrepit tub."

"You seem to be reminding me that decrepit tubs such as Tu-Amak put the torch to much of our fleet forcing you to seek shelter in such a decrepit tub? But if you think so little of Rodina and so much of Tu-Amak then ponder this: three days ago, with great regret, Rodina destroyed the Galactic Congress warship Girolais and all the Gra aboard her."

"You must have misidentified the ship," he insisted. "Girolais is a heavy cruiser. A frigate doesn't carry the firepower necessary to punch through such defenses."

"Nevertheless, it's so," she asserted. "You're looking at the new Galactic Congress Navy, and my advice to you is to steer well clear of it while you are dressed in Gra colors. Your best protection may be to accompany Rodina. We may be able to protect you better, even, than you can protect yourself."

"And if we come across any Gra, they may hesitate long enough, because of our presence —"

"Exactly," she confirmed his thought.

—==+++==—

As Aliria had reported, Pelause and Piraeus were cinders. Not even bacteria had survived the Gra attack. It had to have been a complete surprise in order for the Gra to penetrate the planetary defenses that thoroughly.

Ruel had fared only marginally better. Not being a military target, the Gra had expended less than everything they had on the surface of Ruel. Most of the ancient forest was still intact, although sensors clearly told of vast wildfires that had denuded large sections of the planetary greencover. Occasional lifesigns were detected, but the

places that had once been centers of civilization were, for the most part, empty.

After considerable begging and bargaining, Captain Dzudek relented and permitted Carson and Burnside a low-atmosphere pass via shuttle so they could get a better look at the surface. Ruel's flora, if not its fauna, gave every appearance of a primordial Earth, and Burnside and Carson suspected the plant DNA to be very closely related to that on their home planet, but they had too little time to do any serious investigation. Beyond that, their volunteer shuttle pilot was unwilling to set his craft on the ground even for an instant, so they had to make-do with the sensor readings the shuttle made as it skimmed the treetops.

Ruel had been, in better times, Irina Dzudek's ancestral home. Seeing it thus savaged by the Gra, her mission became clear and her resolve became steel. They would pay for this. The Gra would most certainly pay for the damage they had done, and the charge for the damage to Ruel's forests would be more expensive than they could now imagine. Silently her mind added one more line to an already long list, and by the force of her will alone she suppressed the single tear forming at the corner of her eye. Tears may come later. For the present, she was a businesswoman preparing to present her bill for disservices rendered.

With the shuttle secured, Aguila Proesti was about to leave orbit when a hail from a Gra patrol vessel demanded they heave-to for boarding. The cutter's captain could not have known that its light armament would be ineffective against Aguila Proesti's reinforced deflectors, nor that he had stumbled into a deadly trap. Aguila Proesti slowed to a stop and it drifted, waiting.

As the Gra cutter came alongside, two surprising things happened more-or-less simultaneously: the Gra ship was set upon by dozens of the mini-VTs Aguila Proesti had sown in orbit over the last several hours, and a Galactic Congress destroyer, Totter, materialized out of hyperspace, deflectors up, weapons online, apparently ready to defend the presumably much-outclassed Aguila Proesti. As the Galactic Congress crews watched, two mini-VTs ripped a hole in the cutter's after deflectors and before it could be sealed two more slipped inside the cutter's defenses. Aboard the cutter, panic reigned as one crew raced to reinforce the deflectors while another tried to hit the almost invisible VTs with blaster fire, and every 'miss' both stressed the deflectors and threatened the ship itself with the ricocheted blaster energy.

On a verbal warning from Aguila Proesti, both ships went to 'all back emergency' in an attempt to get clear of the area before the Gra cutter's drivecore collapsed.

Inside the cutter's deflectors, the gnat-like torpedoes circled, analyzing the ship's surface for weak spots while blaster pulses caromed from deflector to deflector until each encountered something — usually the cutter — that would not reflect the energy and was absorbed.

Whether it was one of Petr's torpedoes or the cutter's own weapons that eventually caused it, the end came only seconds after the initial deflector breach — a brilliant flash as the cutter was converted into a cloud of charged particles desperately trying to get away from each other.

"Aguila Proesti from Totter, what is your condition?"

"We are undamaged, Totter," Dzudek informed them. "Your appearance would have been well-timed had we been in any real danger. How is it you come to be where you are?"

"We have been shadowing the late cutter for several days," Totter's captain explained. "The cutter has been shadowing you for almost a day, and your position is by now known to the Gra. We had planned to intervene should the cutter make an attack on a Galactic Congress vessel, but it seems our assistance may have been unnecessary. Do you have any idea what just transpired here?"

"Yes, I believe we can provide an adequate explanation, but we are already late for a rendezvous. Are you on an assigned patrol or are you free-lance?" Dzudek asked.

"Captain," Totter's CO replied, "there are no longer any assigned patrols. Any Galactic Congress ship you meet is, of necessity, free-lance. Perhaps it would be profitable for Totter to accompany you."

"I doubt that Totter could keep up with us. What is your V-max?" Dzudek asked.

"Totter is rated at $\text{D}1.4$," he replied. "And yours?"

"Aguila Proesti cruises at $\text{D}1.6$," Dzudek boasted, "and has been as high as $\text{D}1.68$. Momentarily, we are bound at $\text{D}1.6$ for a rendezvous at Glat. Do you wish to meet us there?"

"We will follow you to Glat at our top speed. Expect us to arrive about eleven hours after you do. Good luck."

Aguila Proesti turned toward Glat and dematerialized into hyperspace. A few seconds later, Totter did likewise.

—==++++==—

Tu-Amak's speed was no match for Rodina, so the frigate spent several hours in orbit around Glat before being joined by the cruiser. There they both waited in yellow-alert.

Glat was the most Earth-like of all the planets in the Galactic Congress: salt-water seas coating nearly 80% of the planetary

surface, several substantial continental masses, gravity a bare eight-tenths percent heavier than Earth's, temperatures ranging from polar to tropical, nitrogen-oxygen atmosphere, vibrantly alive with millions of major species of plants and animals, and some of the animal species showing signs of proto-intelligence, a companion planetoid of substantial size traveling in lock-step with Glat and causing tides in the seas. A Terran would find this planet comfortably — or uncomfortably — familiar.

For most of the intelligent species that made up the Galactic Congress, however, there was something about Glat — no one seemed able to put their finger quite on the mark — that left them feeling uneasy and jumpy whenever any of them spent substantial time on the surface. Glat thus was left entirely to its own devices, Virtually no one deliberately went there. One day in the far future, a Terran transplant would remark: "It's a really nice place to live once you get used to the idea of having at least one Richter-1 earthquake per day."

Because Glat was seen as essentially valueless, it was an ideal place for a secret meeting, and the reduced likelihood of an enemy stumbling across them urged Aloise Aliria to give her crew some much-needed relief from stress by slipping to yellow-alert. A short crew listened for signs of the approach of Aguila Proesti which was now very overdue.

Twenty minutes out of Glat, Aguila Proesti sent a coded hail on a subspace channel and received an 'all clear' response from Rodina. As it materialized into normal space in the vicinity of its destination, both Rodina and Tu-Amak sent welcoming hails as a way of notifying Aguila Proesti that Tu-Amak was a 'friendly'.

"Captain Dzudek," Aliria began, "allow me to present Amil Coram, Commander of the 20th Rangers, the new CO of the Tu-Amak."

"Commander Coram, welcome to what's left of the Galactic Congress Navy. I hope you and your crew are ready to go to work."

"Captain Dzudek, nothing could please us more than a chance to work with the Madwoman of Piraeus. Do you have orders prepared that I may pass along to my crew?" Coram asked.

"In times such as these, rigid orders would be more of a hindrance than a help. I have only a policy directive for you and your crew: the restoration of the Galactic Congress is paramount. The safety of your ship and crew, irreplaceable assets, is secondary only to that. In operation, you are to destroy if necessary or cripple if possible any Gra warships you encounter. You are to recover if possible or destroy if necessary any Galactic Congress vessels that have fallen into the hands of the Gra. I'm afraid you will find that the Madwoman of Piraeus has had to become sane. I hope you will not find fighting alongside me too much of a bore."

"I'm sure we will find 'fighting alongside you' an educational experience, if nothing else," Coram responded.

"Well, then, welcome to the Resistance," Dzudek continued.

"Our armada is growing," Irina Dzudek told Aliria. "We were met at Ruel by the destroyer Totter, another Navy survivor. Totter is on its way here now and should arrive in another ten or eleven hours if all goes well. I plan to refit Totter here to upgrade its drive-core to —"

"I don't think you should plan on much help from Totter, Captain," Aliria broke in.

"Why not?" Dzudek asked.

"According to the latest reports I have from the Naval Intelligence operation on Teresa, Totter is a captive asset."

"What does that mean?"

"Totter has been captured by the Gra and its crew suborned. It's a Gra asset now," Aliria explained.

"Oh, no —" Dzudek gasped, taken back by her own error. "I told Totter's captain I would wait for him here, and he knows there will be at least one other ship with me. If he brings reinforcements, we could be in for quite a fight, one we're not quite ready for."

"We have ten hours," Commander Coram inserted, "let's put it to good use."

"You have a plan?"

"I do," Coram confirmed.

—==++++==—

Totter materialized a hundred thousand kilometers clear of the Glat-Tenglat binary and decelerated under full impulse. This gave its sensors time to analyze the situation, which appeared to be this: the Gra light cruiser Tu-Amak had tractor beams on two drifting hulks, a Galactic Congress frigate and the Galactic Congress ship Totter had met off Ruel. Tu-Amak seemed to be having some difficulty handling both of the ships at once.

Totter sent the Gra recognition signal as Tu-Amak's deflectors came up under a red-alert: "*Tririri-ganzel-Totter-am*", and received in reply "*Tririri-am-ganzel-Tu-Amak*". No one on board Totter noticed, apparently, that the reply came from Aguila Proesti, but Tu-Amak's deflectors came down and an instant later Totter's did likewise, and that was all that was necessary. The three ships' blasters were all set to 'stun' and they fired at full power directly into Totter. After several seconds of bathing the Galactic Congress ship in radiation, security teams from Tu-Amak transported into every critical area aboard Totter. By the time the stun was starting to wear off, every personal weapon had been secured, every Navy officer was securely in the brig, every Gra on board was securely in the auxiliary brig, all

enlisted crew were confined to quarters, and Tu-Amak's anti-matter store had been transferred aboard Totter.

Amil Coram spoke to the crew of the Totter over the shipwide intercom: "The Gra light cruiser Tu-Amak is presently in orbit about Glat. Its hyperdrive-capability has been disabled, but we expect a substantial Gra force will be in this vicinity soon and they may correct that. Any of you who believe you will fare better at the hands of the Gra are invited to so indicate and you will be transferred aboard the Tu-Amak. Doing so is a permanent renunciation of Galactic Congress citizenship. Any who stay should know that the ship's logs will be examined for evidence of violations of the Articles of War. Violations will be punished with the maximum severity allowed by those articles. You have four minutes."

Of the 180 original crew of Totter, 72 chose to be transferred to the drifting hulk of Tu-Amak. All of the Gra overseers were transported across unconditionally.

The entire operation had taken twenty-seven minutes, and everyone knew that time was running out quickly.

"All secure?" from Aguila Proesti. Rodina reported 'all secure' and a few moments later Totter did so as well. "Rodina, proceed to Camarinetta and survey. Wait for us there if possible," Dzudek ordered Aliria. "Aguila Proesti will accompany Totter at D1.4 and rendezvous with you six hours late."

"Aye, aye," and Rodina turned toward Camarinetta and dissolved into hyperspace.

"Totter, get moving," and Totter did likewise.

Just before it, too, left for Camarinetta, Aguila Proesti launched two naval vacuum torpedoes at the drifting Tu-Amak, fracturing it into several thousand pieces, none of them large enough to support life. As a last gift to Glat, 200 mini-VTs, now casually referred to as 'Alioth traps', were ejected from the aft cargo hold into the planet's near-space, then Aguila Proesti's auxiliary engines swung it onto a heading for Camarinetta and it winked out of sight as it transited to hyperspace.

16 - IN HARM'S WAY

Two Gra destroyers materialized off Tenglat and decelerated rapidly as they scanned the nearby space for ships. Finding none, they reported their situation to the main Gra force now only minutes behind them, then they dropped their deflectors in order to maximize the range of their sensors.

The prowling torpedoes always attacked in pairs, one slightly behind the other. In this way it might be possible for one, the leader, to damage a ship's deflectors enough to allow its partner to deliver the *coup de grace*. And being machines, they cared not that the task might be difficult or impossible.

The instant the two destroyers materialized into their space, the closest four pairs selected each of the two ships and turned to intercept. Twelve other pairs interrupted their random prowl about Glat and headed for Tenglat to act as a second wave. Only seconds before the torpedoes' arrival, the destroyers' deflectors evaporated as power was routed to the sensor arrays, but the high-resolution sensors had not yet come on line when the two leading torpedoes impacted near the destroyers' main matter-antimatter exchange couplers. The resultant bursts of energy incinerated the destroyers almost as easily as it dispatched the trailing torpedoes. In the space of a millisecond, all traces of the two ships were converted to an expanding cloud of gas. With no potential targets now in range, the other two pairs resumed their random prowl and were joined momentarily by twelve more pairs left, now, without a purpose.

Lulled by the early reports from the destroyers, the four capital ships that followed them never bothered to raise deflectors as they materialized at Tenglat. One, a light cruiser of the same class as Tu-Amak, appeared within two hundred meters of a cruising pair and was set upon so quickly its crew probably never even got a look at the nearby planetoids. In the ensuing few seconds, one heavy cruiser managed to raise its deflectors, but the other did not, and the battleship Kitri-Uku that arrived moments later instantly went to red alert. The captain of the surviving cruiser, seeing the destruction visited on two ships and suspecting the destroyers that preceded them had suffered the same fate, acquired hyperdrive and departed the system. The admiral in command of Kitri-Uku ordered the deflectors stiffened and held off several attacks until eleven more pairs of Alioth traps, summoned from Glat as reinforcements, punched the same spot on the port deflector in rapid succession. As the seventeenth warhead exploded the deflector wavered for an instant and the next five slipped

inside the defenses. A moment later Kitri-Uku, pride of the Imperial Gra Navy, flashed into a brilliant incandescence and disappeared.

—==+++==—

"It had to come from somewhere. It didn't just grow," Feni blustered.

"Of course, but that doesn't mean we'll ever find out where it came from," Gavin snapped back.

"Isn't there a propulsion track?" one of the other officers asked.

"Yes, but these devices do a random prowl," Gavin explained. "How much time are you willing to invest chasing one back? And how will you pick out just one track from the hundreds that crisscross their way through space? And, remember, the farther back you go, the weaker the track becomes. And — if the track crosses itself even once, our following it will destroy the evidence," Gavin paused to reflect on what he, himself, had said. "No, what we have here is the perfect little bomb: enough intelligence to know what its target looks like, patient enough to wait for the right moment, no way to trace it to its source, and small enough to escape detection by anyone or anything that isn't looking specifically for it, and sometimes even by those who are."

"We must find the source," Feni Larossa insisted, "if for no other reason, to protect it while it makes more. Ideas?"

"It's either a ship or a Naval Depot," Gavin suggested. "If it's a Naval Depot, it's somewhere else. There are none in our present vicinity. If it's a ship, it's either running away from the Galactic Congress or heading back in.

"Looking out away from Galactic Congress space, I see nothing but the Great Gap, so I presume it did not originate there. The ship, if it is a ship, must be fleeing Galactic Congress space."

The captain's hand covered his mouth and jaw as he mulled the speculation of his first officer. "Given the efficiency the Gra have thus far demonstrated, that seems a logical act, but if our benefactors have set out across the Great Gap, there is no reasonable possibility of our ever finding them except by the most improbable of accidents. For us, the only reasonable response must be to assume they are still in Galactic Congress space, and still in harm's way.

"And you're probably right that they aren't inbound, either. My guess is that whatever agency is planting these mobile mine fields may be doing so to form a firebreak, a buffer zone inside which the Gra will never be safe.

"We'll check the nearby systems to see if there's evidence for that and for clues to their probable route.

"Set course for Impor. We may be able to replenish some of our supplies there. And keep a sharp ear for any reports from the Gra of unusual occurrences. And let's try to steer clear of other ships. A low profile is now our best defense."

"Aye, aye, sir."

—==+++==—

According to the planetary authorities on Impor, the Gra had visited it several months prior and had judged it either too valuable to destroy or not worth the effort. Whichever it was, Impor's surface was intact and so was its small fleet of private and militia ships. The general officers of the militia had correctly assumed that any attack on the visiting Gra warships would have resulted in zero damage to the Gra and total annihilation of Impor and kept their ships grounded.

Impor's economy was typically described as 'well-rounded': there was nothing about it that could be considered dominating the economy. There was nothing particularly special about it either, so they didn't engage in much trading with their immediate neighbors. Impor, it was said, had one of everything.

The low level of off-planet commerce equated to a low incidence of trade disputes with their neighbors and this echoed itself back into Impor's whole culture. 'Nobody ever gets excited on Impor' was its one-line epitaph throughout the Galactic Congress, if 'epitaph' were the right word. Other planets' economies had their highs and their lows. Impor had a 'trend' and it was clearly, if not dramatically, upward. The reason for this, the Imporads asserted, was that what passed for government on Impor was more concerned with getting things done than preventing things from happening.

On Impor a non-commercial, non-military vacuumship was as likely as not armed with an emitter-array (perhaps another reason why nobody gets excited there), and Impor was one of the very few places in the Galactic Congress where that was true. This made it reasonable to use one's yacht for interplanetary travel: pirates, a rarity in any case, steered clear of Imporad vessels. Thus the level of expertise among the yachting populace was quite high and the demand for up-to-date information from the Galactic Ephemeris matched it. The planetary library system was a charter subscriber to all dispatches from the now-silenced GEHQ.

A stop at Impor or any of the seven other GEHQ mirror-sites was an opportunity to upload the latest changes to the Ephemeris, and Coridasta took advantage of it as well. The security code it used for ordering the upload caused several encrypted dispatches, most of them more than a year old, to be included. Among these were many

triple-encrypted reports that, when decoded, turned out to be from several ships including the GETG survey ship Aguila Proesti.

"Aguila Proesti? Isn't that Wing Commander Dzudek's new ship?" one asked.

"Yes, I think it is. I wonder where she is now?"

"I couldn't begin to guess, but I'll tell you one thing for certain: there'd be a lot fewer Gra around if she hadn't been transferred out of the 23rd."

"—And we'd all be dead," another noted grimly.

"Last year, this year, or next year, what difference would it make?" came the retort. "Right now, we're only waiting for the Gra to catch up to us with enough firepower. Except for a lucky break we still can't explain, it would have been three days ago in the Tir asteroid field. At least when Dzudek was commanding the 23rd you knew that if you died the price the enemy had paid for your death would make them curse the day their path crossed the 23rd's. Maybe she was crazy like everyone said, but she knew what she was doing, she knew how to wage war, and she was one thought ahead of the Gra all the time. You want proof? Compare our record since she left with our record before she left. Now tell me which one you'd want in your service file."

"Yes, you're right. Say, I wonder if the 'ear' might have heard something?"

Four hours later, a volunteer courier in his private yacht departed for Teresa at better than $\text{D}1$. The following day, Coridasta left Impor to continue its survey of the perimeter.

—==++++==—

Camarinetta's claim to fame was that it lay on an almost direct path between several major commercial and population centers. If you were on your way to somewhere, there was a fair chance you would pass near Camarinetta. Over the years Camarinetta gradually became a transit hub, a place where you could almost always find a ship bound for where ever it was you wanted to go. It was merely a natural progression that the space in that vicinity became known as 'the Camarinetta sector' and that most governmental functions for the sector were headquartered on or near Camarinetta itself.

The Gra expeditionary force sent to Camarinetta seven months ago was met at a considerable distance by virtually the entire naval garrison assigned there. When the battle was over only eight Gra ships were intact and the Camarinetta garrison had been wiped out. The five Gra vessels that could still move towed the other three into the Camarinetta shipyard where they would later be repaired.

Two Navy frigates that had been held in reserve fled to safety and the Camarinetta sector surrendered to the Gra unconditionally.

Commander Aliria knew that the enemy presence at Camarinetta had been reinforced since, but had no solid information on the totals. Rodina materialized well off Camarinetta with most of its equipment already powered down in the hope that they would present as convincingly as possible the appearance of a derelict. Only passive sensors and listening devices were operating. During the first four hours two patrol vessels passed within sensor range, scanned it, saw no sensors and no movement, and kept going. Communications traffic during the six hours before Aguila Proesti and Totter arrived indicated the possible presence of twenty Gra warships, but there was no way to determine what kinds of ships they were.

Six hours on post, Rodina responded to Aguila Proesti's coded inquiry with a coded 'caution'. Minutes later, Aguila Proesti and Totter drew abreast of Rodina and, using the lowest power setting possible, exchanged the formalities of arrival. During the thirty-hour transit, Totter's auxiliary engines had been upgraded for pumped plasma. The auxiliaries would now move it along faster than its main engines, but just barely. Refitting of the main engines was well underway. When completed, Totter would cruise near D1.7, and Aguila Proesti would be the slowest ship (by a fraction) in what they had begun to call 'the Resistance'.

—==++++==—

The yacht "Hot Stuff" slipped alongside a docking port attached to Teresa GTS-1 and the pilot crossed to the station where he might find a narrow-cast commlink. The questions he would ask and the answers he might get were best kept from publication. This particular pilot had been chosen from among several volunteers because his wife's cousin was employed by *Hear! Hear!*, one of the most widely-known and well-respected electronic eaves-dropping companies. The heart of their operations was, of course, Teresa.

After the mandatory initial social formalities, he got right to the point:

"I've been sent to bring back any information on surviving Galactic Congress units in general and one ship, Aguila Proesti, in particular. We desperately need to find the source of what may be hundreds or thousands of small, independent naval vacuum torpedoes that seem to be programmed to hunt Gra shipping."

"I've never heard of such a thing," she told him. "There are only about twenty Navy ships not yet captured or destroyed by the Gra. I'm sending you a list with the date of the last update for each

ship. 'Aguila Proesti' — I don't have anything on that ship for a long time — over a year since it was dispatched with sealed orders.

"As for your naval vacuum torpedoes, there are no references that I can see, but we may not be asking for the right thing." She continued working the computer as she spoke. "I'm looking for unexplained losses of ships and 'overdue, presumed lost'. Here's something: four, maybe more, ships — heavyweights, but not identified specifically — ambushed off Tenglat. No report of enemy (that's us) vessels. Report filed by the cruiser 'Priurm' and mentions that it just barely escaped.

"Here's another, the day prior: patrol vessel destroyed near Ruel by an unknown agency. Well, hello! You were looking for the Aguila Proesti, weren't you? This report has a spelling error: 'Aguilla' instead of 'Aguila'. That's why it didn't show up on the search. A patrol vessel identified only as P-3499 and the Galactic Congress destroyer 'Totter' stopped Aguila Proesti for inspection. P-3499 was destroyed almost instantly. Ah! I see. This report is filed by Totter with the Gra High Command and asks for more ships to meet Totter at Glat. Looks like they sent a task force and lost almost all of it. Where was this 'Aguila Proesti' when the Navy was getting mangled by the Gra?"

"Beats me," the pilot told her. "I've never even heard the name before I got sent on this errand."

"I just looked up 'Aguila Proesti' on the last Naval roster," she inserted. "It's not there."

"Try the «General Catalog of Ships and Shipping»,” he suggested.

"There it is: CNV-211. It's a survey vessel owned by GETG. I didn't even know they were armed," she noted with surprise.

"Well, whatever Aguila Proesti's got, we could sure use more of it."

"I think I can grant that wish — Here's a dispatch from about two weeks ago: Galactic Congress cruiser 'Girolais' attached to the Imperial Gra Navy reported it was about to intercept the Galactic Congress frigate 'Rodina'. There are no further reports from Girolais. One or two days later, Rodina was here reprovisioning."

"Are you suggesting that a frigate defeated a cruiser?" the pilot asked incredulously.

"Interesting speculation, isn't it?" she answered. "I'm only mildly surprised. Things are changing very rapidly these days, and rumor has it that there are big changes still to come."

"What kind of changes?"

"I think we're about to be paid a most unpleasant visit by the Gra. If that happens, we could lose a substantial portion of the knowledge we have of the Gra language."

"You're talking about the Institute," the pilot offered.

"Yes," she confirmed. "We've found out that most machine translations of Gra are close to worthless. Only the wet brains at the Institute seem to be able to figure out what's actually being said — the words themselves often don't make much sense."

"Are there any plans to move them to safety?" the pilot asked.

"Not that I know of."

"Maybe I should offer to take one or two back to Impor with me."

"I think that's a good idea," she agreed, "but you'll have to convince them that Teresa is in serious enough danger. They're here because of Teresa's ears. The only argument that might work is that the ears will be destroyed and they will have no more input."

"That sounds like a high level of dedication to me."

"We're all dedicated," she told him. "If we weren't, we'd all be someplace else. Those of us in the listening business can sense what's coming, and I don't mind telling you I'm scared. The only thing that might save us is if the Gra see enough value in Teresa's ears to keep the planet intact. Teresa has no defenses worth mentioning. The Gra can have us anytime they want."

His next call was to the Institute which routed him directly to Otho Demaris, head of the Gra section. Demaris could never bring himself to leave the Institute, but he did cause an announcement to be made to all the students in the Gra section, two of whom took the pilot up on his offer of transport. Six hours later with two of the best available translators of Gra aboard, "Hot Stuff" boosted away from Teresa on a direct course back to Impor.

—==++++==—

The plan was simple, daring, and risky: Rodina, the fastest ship of the Resistance while Totter's refit was still incomplete, would make a long, looping approach to Camarinetta at substantial drive, drop into normal space as close as possible to the shipyards, dump as many as thirty VTs (its entire current stock) at any identifiable Gra ship, then reacquire hyperdrive and escape. Aguila Proesti and Totter would wait for the garrison to pursue Rodina and attack whatever was left.

Rodina, after leading any pursuers to a safe distance, was to increase speed to maximum and return to Camarinetta to assist with clean-up in the short time remaining before the Gra pursuers were able to retrace their path. The whole operation was expected to take not more than fifty minutes from Rodina's initial torpedo run until the return of the pursuers to Camarinetta.

Moored in the shipyard, the destroyer/escort Palamaus was always on alert to some degree. At the moment that degree was higher than normal. Less than an hour earlier its Communications officer caught the eye of Edan Garonne and made a hand signal for 'friendly vessel'. This Edan interpreted to mean that Comms had picked up a signal on a Galactic Congress channel.

While Palamaus was considered 'suborned', many of the crew did not agree. Among themselves they dreamed and talked of the day when they would turn on their Gra overseers and regain their honor. Comms quietly alerted Counter-Measures: 'full-alert', and the CM officer made the deflectors ready but didn't yet bring them up. In the forward- and aft torpedo bays, crew members casually moved a few steps closer to the control panels while others positioned themselves nearer to their Gra guards. In the aft bay the senior torpedo tech stepped to the console and began working it.

"What are you doing?" the Gra guard asked.

"Diagnostics," the tech replied. "We have to run diagnostics every month or so. Would you like to help?"

"No," the Gra guard answered. "Stop doing that until you get permission from the Chief."

"Diagnostics can't be stopped once they've been initiated," the tech lied. "Come on over here. You can make sure I don't do anything forbidden until we can get the OK from your Chief."

"All is forbidden," the Gra guard stormed. "Stop now."

The senior tech shrugged his shoulders in a gesture that clearly said "Nothing I can do about it, Bud."

Two thousand kilometers from the shipyards, Rodina punched through into normal space and began acquiring targets. As a target was identified, its coordinates were passed to a cluster of VTs whose size was determined by the characteristics of the target and the number of torpedoes as yet unassigned.

As soon as Rodina appeared, Palamaus' CM officer called out "Ship inbound" and raised deflectors. Edan Garonne leaned on the shipwide intercom switch and announced: 'forty, thirty-four'.

At the sound of Edan's voice giving the long-awaited signal, crew members all over the ship simultaneously disarmed the Gra guards and executed them. In the aft torpedo bay, the senior tech turned, slipped the blaster from the belt of the guard who was by now only inches away, pointed the muzzle at the guard's neck, and pulled the trigger. Without stopping the motion, he swiped the 'FIRE' button on the control panel and six VTs launched from their racks at point-blank range for the battleship Ganta-Uku whose deflectors had not yet been raised. The great ship fractured into several pieces, but remained firmly attached to its moorings.

Moored nose-to-nose with Palamaus was the Galactic Congress frigate Alamir, firmly in the hands of Gra. When Palamaus' CM officer raised deflectors, sensors aboard Alamir picked up the activity and Alamir's CM officer duplicated the action. Now both ships had full deflectors extended so that they were actually in contact with each other and neither dared fire across the boundary.

With only seconds left before Rodina's VTs arrived, ships all around the yard raced frantically to get their deflectors up, to get mooring locks released, to get moving and out of harm's way. Of the sixteen Gra ships in the yard, one, Ganta-Uku, was so completely disabled that the first anti-matter-tipped torpedo from Rodina pulverized what was left of it, allowing the following four to continue unobstructed on their way. Six more ships were preparing to leave on patrol when the attack began. They already had full power available and were able to side-step and deflect the attack, but four mooring slots, still in the same place despite the departure of the ships they held only moments ago, were destroyed or damaged. These six ships immediately gave chase to Rodina, leaving behind three ships without apparent damage, five seriously damaged and not responding, and one whose crew had everything they could do to keep it from flashing out of existence.

Onto this stage stepped Aguila Proesti and Totter, hoping for scenes of death and destruction, but prepared to find a numerically-superior force waiting to do battle. Instead they found a Gra light cruiser lining up for a shot on Palamaus at the request of the Gra commander on Alamir. Totter herded the other two Gra ships off to one side while Aguila Proesti took a single shot at the cruiser, severely damaging its aft deflector. The cruiser turned toward Aguila Proesti in order to present a working deflector to the next attack only to give Palamaus two clean shots at its engines through the damaged aft deflectors. In the face of clearly superior fire-power, the remaining Gra ships capitulated.

Aguila Proesti hailed Palamaus: "Who's in command aboard Palamaus?" Her image appeared on Palamaus' screen at the same time Garonne's appeared on hers.

"Wing Commander Dzudek!" Garonne shouted in great surprise.

"Nonsense," she replied. "I'm in command here. And I've been slipped to Captain. Garonne, how did you get into this mess?"

"It's a very long story, Captain. One day we shall have to go over it in fine detail. I suspect today is not the day."

"I suspect you're right. What happened here?" Dzudek demanded.

"We were able to cripple the Ganta-Uku when the attack started, then Alamir presented too much of a threat for us to do

anything further. If you hadn't come along, that cruiser would have splashed us."

She hailed Alamir: "Who's in command on Alamir?"

"Commander Kami Atraha, sir," the young female officer replied. "I'm glad to see another Galactic Congress vessel still fighting."

"Yes, of course," Dzudek snapped back dismissively "Commander, I have need of your ship."

"Aye, aye, we look forward to serving with you Captain," Commander Atraha answered.

"You misunderstand me, Commander Atraha," Dzudek snarled. "I have need of your ship. You and your crew are expendable. When you had a chance to shake off the Gra yoke, you declined to make the effort or to take the chance. You lack the instincts that will be needed for repulsing the Gra, and I don't have time to train you, presuming, of course, that you and your crew are trainable at all. Further, by allowing your ship to be used to threaten Palamaus, all of you aboard Alamir have committed a capital offense. By rights, I should convene a general court-martial to hear that charge, but I don't have time. You and your crew are to be transported to the surface of Camarinetta where you should consider yourselves 'under arrest' pending the restoration of Galactic Congress control over this sector."

Boarding parties from Totter and Palamaus took control of Alamir and began emptying it of personnel: Gra were transported to the cruiser. The regular crew were disarmed and stripped of their uniforms before being transported to the surface. Palamaus drained the anti-matter from the Gra ships leaving them crippled, defenseless, and attached to the docks only by mooring tethers. Gra personnel in the shipyard were likewise packed aboard the tethered ships.

"Captain, living conditions aboard those ships will soon become unbearable," Garonne told her. "You have to find some other way to handle those prisoners."

"What do you suggest, Edan?" she asked.

"Captain, if it were up to me, there wouldn't be any prisoners."

"My thoughts, exactly," she agreed.

Each ship took one torpedo. On the surface, the former crew of Alamir watched nine bright splashes appear where the Camarinetta shipyards would have been.

With no more Gra ships nearby, Aguila Proesti and Totter salted the area thoroughly with Alioth traps, then the four ships drew back to a safe distance from the Camarinetta shipyards to await the arrival of Rodina.

—==+++==—

After fully twenty-five minutes of chasing the ship, the plasma trace simply ended. The ship had probably dropped out of hyperspace and changed course. The Gra ships did likewise and began searching for the beginning of the next track. They found it in just a few seconds of searching and resumed the chase, but they had no sooner acquired hyperdrive than the trail ended again, not more than fifteen or twenty light-seconds away. Finding the third trail was as easy as finding the second, but this trail headed straight back to Camarinetta. The patrol leader sent an urgent message to the Camarinetta yards warning them of the approach of the raider, then they resumed pursuit.

Rodina popped into normal space quite near the other four Galactic Congress ships. "There are six ships in pursuit," Aliria informed them, "and we have not more than eight minutes before they could arrive. Are we going to make a stand here?"

"We can never risk one of our ships when there is another way," Dzudek told Aliria. "Totter and I dumped nearly three hundred Alioth traps around the yards. Let's let them do the dirty work for us. If some of the Gra get away, all the better: their high command will know there is one more place in the Galactic Congress where their ships are not safe.

"I'm sending Palamaus home with Alamir. They will rendezvous with the Empress for refitting, then they will become the Home Squadron while we continue to draw the Gra and lengthen their supply lines.

"Garonne, your small force has a very short list of priorities. Pelause is, unfortunately, no longer an objective worth defending. It is also not worth attacking, and thus becomes a relatively safe base for your operations. Your priorities are: first, the restoration of the Galactic Congress; second, the safety of your ship and crew; third, recovery of our ships and personnel and destruction of Gra ships and personnel. That should keep you quite busy."

Only moments before the six Gra pursuers popped into normal space at the Camarinetta shipyards, the small force of the Galactic Congress Resistance split into two groups on two headings and left Camarinetta far behind.

17 - SEMINARS

One of the nicest things about a ship like *Aguila Proesti* was that its mission — its original mission — was clearly research-oriented. The bulk of the crew were scientists first and sailors second, unless you wanted to slip 'explorers' in between. There was, thus, a great need for educational material to be available for the researchers when bizarre or unusual questions arose.

Back on Earth, 'free time' often meant 'recreation' although there was some evidence that a sea-change was taking place: college enrollments in Science and Engineering were increasing, even at the post-graduate level, despite a more-or-less constant ratcheting of the entrance requirements upward. That is, the students were getting better and there were more of them.

Aboard *Aguila Proesti*, 'free time' almost always meant 'poking around the library'. The library, in this case, was any view screen anywhere on the ship, the most convenient one of all being, naturally, the one in your sleeping quarters. That almost required that each member of the crew regardless of rank have their own room.

Burnside took full advantage of this, as did Carson. Burnside had already completed a high-level survey of (to him) previously unsuspected areas of the physical sciences in the otherwise incredibly boring fifteen days between Earth and the rendezvous with *Rodina*, while Carson, always the pragmatist, concentrated on becoming familiar with ship operations.

The 'visuals' were a problem because of the alphabet used. The two were getting better at reading — they had to: this was 'total immersion' such as few had ever experienced it — but there was still a long way to go. A student of Sanskrit or Arabic or Malay would be faced with the same kind of problem as regards the alphabet but after translation the terms would be noddingly familiar, and there would be the experiences of those who had passed that way before. Not so here. The translators they carried with them at all times now enabled them to ask virtually anyone for an expansion of an unknown word or phrase, but there were a surprising number of those that had no easily identifiable translation. Try to explain 'cognitive dissonance', for instance, to someone whose species is incapable of lying.

Carson was by now convinced that he could get a shuttle from here to there if only someone would input the coordinates of 'there' for him. 'Celestial Navigation' was not much taught on Earth these days, but there was a quite professional treatment of it in the ship's library, and that was next on Carson's list. Burnside, a pilot

himself and much more a realist than his student, pointed out that knowing what the instrument panel looked like was a far cry from actually being able to fly the thing. "Get some lessons," Burnside advised him, "before you kill yourself or somebody else. A little knowledge is a dangerous thing, and that's doubly so in this case."

—==+++==—

Since there no longer is a Fleet Museum in which to display it, Petr reasoned, there's no longer any reason not to bring it up to specs.

The disassembled parts of his blaster littered the small desk in his room. Petr sat there, hands folded on the table before him, as he pondered the differences between this and the giant version he repaired on Rodina. The principle was the same; only the scale was different. The resonator provides the base waveform, the macroid inverter re-phases the wave and makes it indeterminate, then power is applied at the exit port and is delivered, concentrated, at the exact pinpoint of the target. A resonator only does one thing, and you can tell whether or not it's doing it. A macroid inverter only does one thing, and you can tell whether or not it's doing it. Power applied at the exit port has to go somewhere, and you can tell if it's being misrouted. *Everything lying here on this table works*, he grumbled to himself, *but not together*. He leaned over and pushed the CALL button on the wall communicator.

"Chief Engineer, if you can spare a few minutes for my education, I would really appreciate it." 'Venda agreed to stop by later.

"Captain's going to be very upset when she hears about this," 'Venda told him when he saw the collection of parts on Petr's desk, then they settled down to investigating why this collection of parts didn't behave like other nearly identical collections of parts. After ten minutes of tossing the problem around, 'Venda already knew the answer.

"—But I'm not sure I should tell you," he said, smiling. "After all, you started out knowing more about naval vacuum torpedoes than I did, and now you'll know as much about directed-energy weapons as I do, maybe more since I've never built my own from just specifications. Next, you'll take on hyperdrive propulsion and I'll be out of a job."

"Come off it, 'Venda. If you know the answer, tell me. This one is beyond my skill."

"I don't believe that, Petr. You just need a hint. Here it is: look at the output waveform. Let me know what you come up with," and, smiling, he left.

Petr turned back to his 'workbench'. "Computer, display four waves of agitated potassium." The diagram appeared on his view screen. "Apply a macroid inverter at 180°." The diagram changed as he watched. "Estimate power multiplier."

"One," the computer replied.

"Petr, you're such a jerk!" he told himself aloud. "You should have checked that with the basic circuitry — Computer, invert at 90°, estimate power multiplier."

"One."

"Invert at 60°, estimate power multiplier."

"Two."

"Invert at 2°, estimate power multiplier."

"Zero."

"Solve for maximum multiplier. Report."

"Maximum multiplier is 1241.702 at 14.08°."

Petr smiled. "Of course."

—==++++==—

A partially completed painting of the Arizona high desert stood in the corner of Janet Mar's room, untouched since the news of the destruction of Piraeus. It would have been the start of a new series of paintings, "Frontiers: Through the Eyes of the Explorers", but there seemed little sense in completing it. The survival of her entire civilization was now in serious doubt.

Instead, she traded her expertise in Cultural Semantics to Fletcher Penta in exchange for some very rudimentary instruction in conversational Gra, she lent her expertise in Molecular Physics to Engineering, and spent her free time taking courses from the Naval Academy curriculum, courses she might already have taken except for a sheet of paper pinned to a bulletin board — courses Tony must already have taken and passed — courses no one might ever take again.

She thought about Tony and wondered if he had been at Palamaus when the Gra destroyed it. Certainly, many cadets were lost there, and it was likely he was among them.

She thought of her parents and friends on Rishar. It was known that the Gra had passed through that sector some while ago but no detail was available on what damage they had done, if any.

She thought about how useless the regular crew must consider the four — no, six — academics. When they were intercepted by P-3499, all the non-combatants were ordered into emergency

escape pods and stayed there until the danger was past. When Aguila Proesti and Rodina were waiting for Totter to arrive, they sat, all six of them, for hours in a pod with two crew standing by the hatch as guards with orders to board and blow the pod at the first sign of trouble. At Camarinetta the same scene was about to be repeated when Janet balked.

"No," she told the duty ensign, "I'm not getting into the escape pod."

"Captain's orders: I must put you into the pod. It's for your own safety."

"If you want me in that pod, get out that blaster and immobilize me. Then you can have me stuffed into it. If you don't want to do that, resign yourself to disobeying your captain's orders."

Elissa Iarva, the ship's Communications Officer and now its Acting First Officer, was called and spent only a few minutes trying to reason with Janet. She gave up when the other five joined in her resistance. "The captain better start thinking of us as crew," they told her, "because we're no longer thinking of ourselves as passengers."

In truth, Irina Dzudek no longer had to worry about a public relations disaster following the injury or death of an academic. Given the current circumstances with the entire Galactic Congress effectively a war zone, no one was 'safe', and this was especially true in the case of the academics. Even she couldn't be held too accountable for such a loss.

"I appreciate your desire to be fully a part of the crew, but none of you are trained in the things you need to know in order to function as a full member of the crew. If you want to remedy that, there are plenty of technical courses in the ship's library. To make yourselves useful," she told them, "first make yourselves competent."

—==+++==—

"Do you think you can do that?" his flight instructor asked.

"Yes," Spencer assured him.

"Proceed."

Cautiously, with the instructor's hand poised over the 'freeze' switch, Spencer played his fingertips across the control panel. Slowly, the shuttle lifted from the floor of the shuttlebay and began to move at a snail's pace out of its parking slot. When it was fully clear of the other shuttles, he halted its forward progress. "View aft, synchronize controls," and with the same methodical slowness he returned it to its original spot.

Other exercises followed although with the ship constantly in hyperdrive exiting the shuttlebay was not practical. Spencer therefore had to content himself with the most elementary level of practice. He

wondered if he would ever get more detailed instruction. Ideally, students learn such skills in protected rear areas where risks can be taken without endangering either the student or the instructor. Such places no longer existed as far as they knew, so there was really nowhere Spencer could 'train' in the accepted sense of the word. Every mission was now potentially a combat mission.

—==+++==—

The position of 'armorer' was more ceremonial than real aboard a survey ship. Such weapons as it was authorized to carry were almost entirely defensive in nature: generally blasters and the occasional VT if there was room. The armorer, therefore, wasn't required to have anything approaching 'expertise' and, here on Aguila Proesti, he didn't. Petr it was who was called upon to help repair Rodina's weapons. The armorer had one thing, however, that Petr had not: authority. The armorer could turn a cargo bay into a test range.

Petr's newly-reconstructed blaster was strapped onto a firing rack near the open mouth of the cargo bay with a robot firing mechanism set to operate the trigger. Petr and the armorer watched from behind two layered deflectors. In a catastrophic accident, the deflectors would probably be inadequate to protect them, but the bay doors were set to close automatically if the bay should decompress. "Fire," the armorer ordered. A pulse of phase-shifted electromagnetic energy streaked out from the muzzle leaving behind an ionization track that quickly faded. When the pulse reached the limit of Aguila Proesti's inertial suppression field, it passed out of hyperspace and, as far as they were concerned, disappeared.

The power setting was reduced from 1240x to about 20x and a 1% barrier was formed at the mouth of the cargo bay, then the test was repeated. This time, the pulse from Petr's blaster splashed on the deflector and illuminated the cargo bay for a few seconds until the charge dissipated.

"What do you think, Petr?" the armorer asked.

"I think I need to learn lots more about blasters."

"Want to know what I think?" the armorer asked. "I think you ought to plaz this thing and draw one from ship's stores. You could hurt yourself with this. You could kill yourself."

"Right," Petr agreed. "Can you issue a replacement?"

"With the Captain's authorization I can."

"Jop. I don't want to tell Captain I tinkered with that blaster. She specifically ordered me to keep my hands to myself."

"The First Officer can authorize it."

"Commander Iarva?" Petr asked. The armorer nodded.

Right.

"Anyone else?" The armorer shook his head. *No.*
Double jop.

—==+++==—

"Gozt!" the Gra task force leader muttered as he read the newly-issued orders, the second change since the task force left port, "why don't they make up their minds?"

They were originally assigned to sanitize Teresa, but received an urgent change directing them to proceed to Glat to act as reinforcements for Kitri-Uku's task force. Now, only a few hours from Glat, they received a second urgent change, this one from the Camarinetta dockmaster, directing them to avoid Glat and to proceed to Camarinetta. Teresa would have to wait.

Dropping out of hyperspace to make the course change, enabled Bizal's sensors to detect a Galactic Congress ship in orbit about a nearby planet. A quick scan revealed the ship to be Gedacta, an unarmed survey vessel, and now apparently unmanned as well. Its drivecore was offline and it was being maintained in orbit only by occasional puffs from its thrusters, probably under control of its computers. Bizal's captain considered destroying it, but it hardly seemed worth wasting a torpedo. He opted instead to simply report the presence of the ship and to continue on his new course.

—==+++==—

A half-day from Pelause, Palamaus and its companion, Alamir, materialized and scanned for the Empress of the Grass. Not immediately finding it, the two ships began a search pattern consisting of long loops terminating approximately at their starting position. After several hours of searching, Palamaus found the Empress of the Grass drifting, apparently lifeless, and issued a hail of one word: 'Willi'

Immediately, the Empress' power came back online and the face of Willi Gulassine appeared on the other ships' viewscreens. "Who calls?" he asked.

"Commander Edan Garonne of the 23rd Rangers. Our two ships have been sent here by the Madwoman to be refitted. Then we are to stay on station in this sector as the Home Squadron. I believe it is Captain Dzudek's intention to make Pelause the heart and center of a restored Galactic Congress."

"Then let's make sure we don't disappoint her," Willi agreed. A datalink was established between Empress of the Grass and the other ships and the critical programs began pouring across the gap. Teams of engineers from the Empress shuttled across to supervise the refit. Then all three ships went to minimum power to make detection as unlikely as possible. For the next three and a half days they would

be easy targets until Palamaus and Alamir had been completely refitted and their crews brought up to speed on the latest advances in Galactic Congress weaponry.

—==++++==—

'Hot Stuff' slipped into a berth in Impor GTS-1 and began transferring data to the planetary archives. "Where's Coridasta?"

"Moved on several days ago," the harbormaster informed him. "What's the matter?"

"Moved on?" Hot Stuff's owner sounded surprised and disappointed. "I thought they were anxiously awaiting word from us. I found the ship they were asking about."

"They're supposed to be checking out Kisi, Rasoul, Paarr, Cost, and back here and in that order. You can probably intercept them at Paarr."

One of the Institute students was intent on joining Coridasta and the other was planning to make Impor her permanent home, so one was sent down to the surface and the other stayed aboard Hot Stuff when it boosted clear of Impor heading for Paarr.

Barely more than a day later, Coridasta answered Hot Stuff's hail and brought it alongside.

"I found your ship," the captain was told. "Aguila Proesti was near Ruel about three weeks ago at about the same time a Gra patrol vessel was destroyed."

"Ruel! That's Dzudek's home planet," Feni Larossa exclaimed. "Could she be back from where ever she was exiled?"

"There's also another Galactic Congress vessel, a frigate, cruising the Camarinetta sector and circumstantial evidence indicates it has a punch like a battleship," Hot Stuff's owner continued.

"What evidence?" Feni and Gavin asked simultaneously.

"The report I have says it went toe-to-toe with the cruiser Girolais and destroyed it."

"That's not good," Gavin opined. "Girolais was 23rd Rangers. The frigate is probably a Gra asset."

"No, I think you have that backwards," Hot Stuff countered. "Rodina is definitely Galactic Congress. It put in to Teresa a few days after that encounter and gave every indication of being ours including using the Institute to do a translation. If it were a Gra asset, there would be at least one Gra overseer aboard to do any translating for them."

"Girolais suborned? I don't believe it."

"It doesn't matter," Hot Stuff pointed out. "What you need to know is that nothing further has been heard from Girolais since its path crossed Rodina's. That ship kills cruisers."

"What else?" Feni asked.

"Glat. A Gra task force walked into an ambush. Four, maybe five, heavyweights destroyed. One ship escaped by the narrowest of margins. That's where the report comes from: Priurm, light cruiser. An earlier report from a suborned destroyer, Totter, mentions Aguila Proesti in connection with the incident at Ruel and asks for a Gra task force to meet it at Glat, probably to capture or destroy Aguila Proesti and whatever ship or ships it planned to meet there, but the report from Priurm mentions no other ships."

Coridasta's captain and FO, twin brothers Feni and Gavin Larossa, looked at each other with wide-eyed grins.

"When Rodina left Teresa," the pilot continued, "it was heading in the general direction of Glat. Did Rodina rendezvous with Aguila Proesti at Glat and splash five out of six Gra warships before they knew what hit them? If they did, this war is over."

"I wouldn't put it past the Madwoman of Piraeus," Feni said with a smirk.

"Irina Dzudek?"

"The same, the new CO of Aguila Proesti. Gavin, what does that suggest to you: Tir, Ruel, Teresa, and Glat?"

"Two ships: one takes the Tir-Ruel-Glat route and one travels Tir-Teresa-Glat. It sounds like they're going around Camarinetta, scouting the perimeter for the best escape route, maybe getting ready to come in Camarinetta's back door."

"That's what it sounded like to me," Feni agreed, "and it's pure Dzudek: draw them into a long line and cut it where it's weakest. I wonder if we ought to haul for Camarinetta and try to get in on the action?"

"Captain, we can barely defend ourselves. Remember, we have only three VTs left. If we get into a scrap with more than one other enemy vessel, we're probably dead. Aguila Proesti and Rodina seem plenty capable of defending themselves, and if we can catch up with them, we'll be able to maximize our strengths and minimize our shortcomings."

"You sound like you have a plan, Gavin," his brother prompted.

"I think we ought to head for Ruel. Pelause and Piraeus are close-by. Since all three have already been pounded by the Gra, they may consider them 'done' and not bother with them further. Certainly, Pelause and Piraeus are no longer worth defending. Maybe the Gra think they're not worth attacking, either. They would make excellent marshalling areas at least for a while."

"That sounds sensible. We'll do it." He turned to the pilot of Hot Stuff. "Thanks for the translator. We'll put him to good use, I'm

certain. We're bound for Ruel, Pelause, and Piraeus, but don't spread it around too widely. Fair winds, calm seas, fare well, Hot Stuff."

Fair winds, calm seas, fare well, Coridasta."

Hot Stuff sheared off, reversed course for Impor and flashed into hyperspace. Coridasta turned toward Ruel and did likewise.

—==+++==—

Bizal's captain, distressed that his messages to the Camarinetta dockmaster went unanswered, decided to proceed with utmost caution. The three ships materialized already in 'red alert' several hundred thousand kilometers off Camarinetta.

"Long-range sensors read no ships in the yards or anywhere within sensor range," the sensor tech reported. "Switching to high-resolution sensors — Captain, there is a great deal of debris in the area of the moorings."

"Is it Gra debris or Galactic Congress debris?"

"I can't tell without getting much closer. We may even have to bring some aboard for a visual inspection."

"Go in closer," the captain ordered.

The escort vessels stayed behind with their deflectors still up. Bizal cautiously entered the Camarinetta anchorage ready to secure a sample for later analysis. "Don't bother," the sensor technician advised them. "It's all Gra debris, not a splinter of Galactic Congress debris. That piece right there," he pointed to the visual, "is 12-rad armor plate —"

"— battleship grade."

"Right. Most of this debris is Ganta-Uku," the tech gave his opinion. "We don't cut the pieces this small when we scrap a ship. We should get away from here while we still can."

"Agreed. Reverse course," the captain ordered. "Deflectors u—." Wham! The bridge crew was sucked into space through a gaping hole in the ceiling and were dead before the second torpedo impacted on the antimatter containment pod. The flash of Bizal incandescing caught the escort vessels by surprise, but they were alert enough to acquire hyperdrive in the seconds remaining before twenty-four pairs of Alioth traps delivered their deadly kiss.

Their report would note that they were in contact with Bizal until the last moment of its life and that there had been no alarm beyond an expected nervousness about being surrounded by dead Gra ships. They would note also that Bizal had identified debris from Ganta-Uku. The Gra High Command would note that one-third of their battleships were confirmed casualties and no one seemed to know how this could have happened.

—==+++==—

"Correct me if I have this wrong," the admiral addressed his area commanders. "In twenty days, I have lost twenty-five ships ranging in size from patrol craft to battleships — two battleships, Kitri-Uku and Ganta-Uku — and none of you know how to account for these losses."

"That's not exactly true, admiral," one of them offered. "We have some evidence that there are several Galactic Congress ships operating in the Camarinetta sector and we are —"

"Several?" the admiral interrupted. "How many, exactly?"

"We don't have exact numbers. Reports —"

"How many do you know of?" the admiral demanded.

"Two."

"And these are?" he pressed.

"Rodina and Aguila Proesti, a frigate and a survey ship."

"A survey ship?" he roared. "They're unarmed!"

"They carry blasters —"

"So did Ganta-Uku," the admiral roared, "and we found only enough of it to assure ourselves of its identity. So a frigate and a bunch of mapmakers have ripped through the Camarinetta sector like our forces were leaf-dolls. Solve this problem — now! The next one of you who loses a ship to this... this... is going to be fed alive to a thull while the others watch."

"But, admiral, there are more than just these two ships!" the underling protested.

"You don't know that."

"It must be true," the underling pleaded. "Priurm just barely escaped the ambush at Tenglatt, and it reported seeing no other ships in the vicinity. We've been over its sensor logs and the only ship signatures recorded were our own."

"How do you account for that?"

"We think some of their ships may be invisible."

"Nonsense!" the admiral sputtered.

"There's no other explanation."

"There's no other explanation that you have been able to contrive, but there is another explanation. Find it. Fix my problem. Who is in command of those ships?"

"The latest information we have is quite old," his aide began. "Rifi Ballasteros commands Aguila Proesti. His career is nothing exceptional. He's been with the Ephemeris since joining the Navy. No battle experience that we know of. Jorg Erallerie commands Rodina. Again, nothing exceptional in his career, as evidenced by the fact that he still commands a frigate after fourteen years in the center chair. He is mostly assigned to patrol and reconnaissance duties."

"That's why we are sure there are other ships whose presence we cannot detect. These two alone are no match for the forces they have already defeated."

"I don't care what the answer is," the admiral informed them, "as long as you find it and find it soon. Begone."

—==+++==—

"You planted no Alioth traps around Teresa? Why not?" Irina Dzudek was visibly upset at Commander Aliria.

"Judgement call," Aliria defended herself. "I felt that were a Gra patrol calling at Teresa to be set upon by Alioth traps, the Gra High Command might have their attention drawn there prematurely. The further that day is pushed off, the better. That's my opinion."

"I agree with the premise, but not the conclusion. Amil, what are your thoughts?"

"I appreciate Commander Aliria's reluctance to place Teresa in danger by making it a battleground, but Teresa has a value whose sign can flip from positive to negative overnight. At any moment, the Gra might decide to cut off the ears of the Galaxy. Our best course is to put the High Command on notice that Gra ships are no longer welcome at Teresa regardless of their intentions. If it were up to me, I would blacken Teresa's sky with Alioth traps and dare anyone to attack it."

"I accept the correction," Aliria offered. "My apologies, Captain."

"No apology is required, Commander," Dzudek brushed her apology off. "An officer who is not ready to act independently is of no value to me. You turned the jogs and read them one way. Commander Coram and I turned the same jogs and read them differently. Good judgement comes from experience, Commander; experience comes from bad judgement. There is no other path."

"As soon as we reach Teresa, I want all three ships to dump their entire stock of traps. Teresa must be as thoroughly shielded as we can manage. There's an asteroid field in the vicinity. We can drain it of raw materials at our leisure and restock the replicator base."

Three ships materialized in red alert, but gross scans revealed no enemy ships. They dumped their traps widely separated, then moored each at different spacedocks, all tail-in.

"I see," the intelligence officer remarked to Aliria, "that you are traveling in company with Aguila Proesti. That is a name we have heard quite a lot of lately."

"In what context, may I ask?" Dzudek interjected.

"Only three days ago the yacht 'Hot Stuff' out of Impor showed up, made contact with what we think may be a relative at *Hear! Hear!*, drained their library of everything they knew or suspected about you, sweet-talked two Instituters into going back with him, and was gone almost before the commissary could swap out the food packs.

"Circumstantial evidence places you near Ruel about the same time that P-3499 was destroyed. We are surprised to see Totter in your company. We were almost certain that Totter was under Gra control."

"Things change," Amil Coram interrupted him.

"So it seems. Aguila Proesti and Totter also appear to have been connected, but we haven't figured out yet how, to an incident at Glat in which four, or perhaps five, Gra warships were destroyed."

"They really do work," Amil Coram allowed, with more than a little hint of surprise.

"Mini-VTs?" from the intelligence officer.

"How did you know that?" Irina Dzudek asked him.

"Hot Stuff seemed to know quite a bit more than I do. That was the main reason he was seeking information about you."

"Who on Impor is interested in Aguila Proesti, and why? Did Hot Stuff give any clues?" Dzudek asked, her curiosity building.

"No. The information flow was almost all one-way. Tell me, does Hot Stuff's speculation about mini-VTs that hunt down and kill Gra ships have any basis in fact?"

"Please don't spread it around, but, as a matter of fact, yes. We call them 'Alioth traps'."

"Well, if you can find an extra dozen or two, send them here. Teresa has no defenses of any sort."

"An extra dozen or two would hardly be noticed here at Teresa. There are almost four hundred prowling your near-space right now," Amil Coram told him with a chuckle.

"And if any Gra ships arrive —" the intelligence officer led off.

"—It will be another Glat."

"Excellent! It seems we both have good news for each other."

"Oh? What's your good news?" Dzudek prompted him to continue.

"A Gra warship — we think it was Bizal — reported a derelict Galactic Congress ship not very far from here — Gedacta is in a maintenance orbit about Afar. Is it worth salvaging?"

"Worth salvaging?" Dzudek let out a whoop. "It certainly is! Gedacta was once the fastest ship in the fleet. By comparison, Aguila Proesti was (at the same time) fourth fastest."

"Commander Aliria, take Rodina to Afar and recover Gedacta. Bring it back here and arm it. It's already configured for pumped-plasma although the condition of its drives is probably why it's parked.

"Commander Coram, I am going to Impor to find out who is so interested in me and my ship that they would send an emissary a third of the way across our territory to ask their questions in person. When Aliria returns from Afar, you will be in command of the Teresa garrison. I expect you to uphold the finest traditions of the Rangers, Amil, but you cannot lose sight of the prime objective: restoration of the Galactic Congress. By all means, preserve this irreplaceable asset, Teresa, but remember that your ships are equally irreplaceable, perhaps more so: the technology each one carries renders them priceless to our enemies, so they must not fall into the hands of the Gra or their minions.

"I am leaving my academics in your care, all except Petr Alioth who has asked to stay aboard Aguila Proesti, and Fletcher Penta whose unique talents we desperately need. I expect Aguila Proesti may be back in as little as five days, or we may have to scour all of Galactic Congress space to find the ones who seek us. Or they may find us. Either way —

"Amil, the best advice I can leave you with is this: trust no one. The ship you now command was almost my undoing because I was so pleased merely to see a commissioning pennant that I didn't look beneath it. Trust no one. And, Commander Aliria, I offer the same advice to you. The time for blind acceptance of others on face value alone is now long past."

"Sir, yes, sir," Aliria and Coram acknowledged at the same time.

Aguila Proesti slipped clear of its mooring, aimed for Impor and boosted away. Rodina headed for Afar.

18 - ENCOUNTER WITH A GHOST

Repeated hails went unanswered at Ruel, and sensor sweeps revealed no ships either in orbit or in near-space. Coridasta moved on to Pelause. The story would have been the same there but for the keen insight of Coridasta's sensor technician who picked out a very weak pattern indicative of power emissions. Coridasta moved closer to investigate.

A half-day out from Pelause it found three ships tethered together, all on minimal power, and scanned them for life-signs. Immediately, deflectors were raised on all three ships and Empress of the Grass challenged the intruder.

"I am Feni Larossa, commanding Coridasta," Feni responded. "We mean you no harm."

"Feni," from Palamaus, "this is Edan Garonne. Where have you been?"

"After the battle of Pizat, we were on our way to the Camarinetta shipyards for repairs when the Gra attacked it. We've been on the run ever since. We still don't have all our systems back on line.

"About three weeks ago, a Gra pursuit caught up to us in the Tir asteroid field, and we were about to go toe-to-toe with their cruiser when, suddenly, something attacked them, destroying two ships and chasing the other off. You'll never guess what did it — a swarm of free-range naval vacuum torpedoes that attack only Gra ships.

"We put in at Impor later that week and picked up some year-old dispatches from the library. Two or three of them were from a ship called Aguila Proesti. Do you know who commands Aguila Proesti?"

Everyone on Palamaus' bridge was trying hard to stifle laughs. They all knew where this was going. Edan Garonne offered: "Irina Dzudek?"

"Right. It made me think — some of the stuff I've been hearing lately make it sound like she's come back from where ever she was exiled — heavy Gra losses out beyond Camarinetta. The more I hear, the more I'm sure she's connected to the mysterious torpedoes that Gra warships attract the way magnets attract iron chips.

"Whether it's her or not, we're trying to link up with whoever is responsible for them. Have you heard any news?"

"You've still got good instincts, Feni," Garonne confirmed. "Captain Dzudek has returned from Arm3 and is waging very effective

war (as you noticed) against the Gra in this sector. Stay with us for a while. Make repairs. We're sure to meet up with her again soon."

"Repairs... Some parts of this ship are in very bad condition, Edan. Many sections are open to vacuum, but that's no more than an inconvenience. Our weapons are near zero. That's a problem."

"That's a solvable problem, Feni. Bring Coridasta alongside Alamir and lash up, then meet me on Empress of the Grass. I want to introduce you to Willi Gulassine, the Madwoman's new FO. He'll explain it all."

—==++++==—

"Commander Coram, We're receiving a 'most urgent' feed from the surface — it's an intercept of a message from the Gra area commander — many ships — find Aguila Proesti — report location to the Gra High Command — Fleet Intelligence wants you to have this information early because it mentions Aguila Proesti — they are forwarding the full text to the Institute for translation and they'll get back to us when they have it complete."

"Contact the Institute," Coram ordered. "Ask them for an estimate on the full translation. Order a launch provisioned and made ready for a run to Impor and another for a run to Pelause. I'll want volunteer crews for them."

—==++++==—

Rodina popped into realspace less than ten kilometers from Gedacta and had boarding parties on its decks just minutes later.

There was no one aboard Gedacta, its drivecore was offline, almost certainly due to faulty MAMVs, and what functions were still active were being run on low levels of reserve power. The engineers quickly extracted the old MAMVs, inserted new ones, and had the ship fully powered before twenty minutes had slipped by.

"Computer," the lead engineer asked, "where is the crew of Gedacta?"

"The crew has transferred to the surface of Afar," a mechanical voice informed him.

"Who is the ranking officer of Gedacta?"

"Captain Lin Gerais."

"Inform captain and crew that power has been restored and they should return aboard immediately."

Shortly, members of the crew began arriving via the matter-transporter. When the captain arrived, he found Rodina's Assistant Chief Engineer completing final integrity checks and recalibrating the instruments.

"How did you restart the drivecore?" the captain asked.

"The MAMVs were faulty," he was told. "We replaced them with good ones."

"There is no such thing. They're all faulty," Captain Gerais informed him. "At least, that's what the engineers from Jepperson Labs say."

"Ours are working fine."

"They all work for a short time," Gerais explained impatiently, "then they deteriorate, becoming less and less reliable until, finally, they won't work at all. Maybe we ought to have a conference with the Jepperson engineers. They can explain. You won't like what they have to say."

When they were all assembled in Gedacta's conference room, the bridge and engineering staffs from both ships and six engineers from Jepperson Labs, the senior Jepperson engineer rose to speak:

"First, I want to say that if it hadn't been for Capt. Gerais, none of us would be here. We were returning to Piraeus from a remote meeting when the Gra attacked. Capt. Gerais rescued us from certain death.

"To the matter at hand, replacing the sub-micro MAMVs for Gedacta's pumped-plasma drive, where ever you managed to get them, is a temporary solution. Those assemblies are all faulty, probably due to a manufacturing error, although we don't know that with certainty. Some will fail very soon after installation. Others will last months before their first failure, but they will all fail eventually.

"Fleet Ops is always looking for ways to test its crews and to sharpen their skills. When it was discovered that the new sub-micros did not have the longevity typical of Jepperson devices, we were going to cancel the project until Fleet Ops asked us to go ahead and install them on six test beds, all GETG ships, anyway. The idea was that the hyper-drives would go offline and the crews would have to handle the crisis as best they could. It was to be a 'live test', and since they were all non-combatant GETG ships, the war effort wouldn't be hampered."

"Do you know what causes the initial failure?" Aloise Aliria asked.

"No, we don't. It may even be possible that some will never fail, but so far we have not come across any of those."

"The reason I ask," Aliria responded, "is that we are now operating at least three warships newly-converted to pumped-plasma. Their drives are under more-or-less constant strain and we have neither seen nor heard of problems."

"What do you mean by 'newly-converted'?" the Jepperson engineer asked.

"Just that," her Chief Engineer answered. "We make some small changes to the main plasma units to fit them for the higher pressures, then install new MAMVs."

"Where do you get the new MAMVs?" the Jepperson engineer pressed.

"We replicate them," Rodina's Chief Engineer replied.

"You're not allowed to do that," the Jepperson man protested. "Jepperson's contract with the Galactic Congress specifically —"

"I guess you'll have to take us to court —".

The engineer stared, open-mouthed while Aloise Aliria's words sank in.

"—unless you prefer the Navy to court-martial us."

"I see your point."

"Now," Aliria began, "I have a question or two for you." The engineers focused their attention on her. "Who in Fleet Ops knew of these faulty valves?"

They exchanged glances among each other before the Chief Engineer offered: "Virtually all of the General Staff had to know, along with several of their administrative staff —"

"Admiral Kor?" Yes. "Admiral Perrel?" Yes. "Admiral Gervao?" Yes. "Admiral Lysaria?" Yes. "Admiral Tassid?" *Probably.*

She turned to Gerais. "Have you met Captain Irina Dzudek in command of Aguila Proesti, one of the six ships so equipped?"

"I've heard of her, but have not had occasion to meet her yet, no," Gerais replied, his distaste for the mention of Irina Dzudek obvious in his facial expression. "She is said to be a barbarian, suited only for combat roles. I doubt that meeting will be very pleasant and I'm not looking forward to it."

"Irina Dzudek commanded the 23rd Rangers until little more than a year ago before she was reassigned to GETG and given command of Aguila Proesti. Aguila Proesti's mission was to map and catalog Arm3. She was sent there in a ship known to have malfunctioning drives.

"What these engineers have just said is that Aguila Proesti was sent across the Arm3 gulf on a suicide mission. They were not supposed to come back from their survey of Arm3. Their drives were supposed to fail either *en route* or while they were engaged in their survey. They were supposed to be stranded far from danger, far from help, and far from any hope of rescue, unable to interfere with the rape of the Galactic Congress, and the entire General Staff knew about it in advance."

"That's nonsense," Gerais dismissed the suggestion with a wave of his hand.

"Further," Aliria continued, "by removing her from tactical and strategic command of the most effective block to Gra expansion, the 23rd Ranger Corps, they effectively doomed the Galactic Congress's efforts to repulse the Gra. They are all traitors."

"Utter nonsense."

"I'm prepared to hear an alternate explanation," Aliria countered.

"Captains do not explain to Commanders," Gerais sneered.

"I think in this case you probably will find that your former rank holds no real value," Aliria informed him, happy to be able to put this strutting clown in his place. "My orders are to escort Gedacta to Teresa, and arm it as a warship. Gedacta will be attached to the Teresa garrison of the Galactic Congress Resistance, under the command of Amil Coram of the 20th Rangers. Gedacta is a prize of salvage. You may consider yourselves passengers if you wish, but this ship is now the property of the Galactic Congress Resistance. I —"

"Number one," he ordered his first officer, "place this insubordinate under arrest along with all of her shipmates."

"Captain Gerais," his sensor technician interrupted, "Rodina's forward torpedo bay doors are opening. Two torpedoes cycling up."

Gerais looked at Aliria with an expression that clearly asked her what was happening. Aliria responded to the unasked question: "Rodina has been monitoring all our conversation since we arrived aboard. My Executive Officer is simply carrying out his prepared orders: he is to destroy Gedacta and everyone aboard her rather than allow this ship to leave the control of the Resistance.

"For your information, two VTs from Rodina were adequate to take down the deflectors of the cruiser Girolais. One will probably be sufficient to disable Gedacta's deflectors. Can this ship survive two such hits?"

Gerais stared at her with a look of disbelief on his face and shook his head. As he did so, his body dissolved into a trillion trillion packetized energy fields and seemed to dissipate into the air.

"Shipwide address," Aliria ordered, then continued: "All hands, this is Commander Aloise Aliria of the frigate Rodina. Momentarily, Gedacta will leave orbit bound for a rendezvous with other ships of the Galactic Congress Resistance. Gedacta is going to war. Your captain has declined to join us and has been relieved of duty. Any of you who do not wish to accompany Gedacta into battle should now resign from the Navy and request transport to the surface of Afar. Shipwide off."

Some minutes later a launch from Rodina departed at maximum drive on a course for Impor and Rodina and Gedacta returned to Teresa. Only Lin Gerais remained behind on Afar.

—==++++==—

"This message is very unusual," Otho Demaris asserted, "because it is virtually all in what we would call plain-text. Most Gra missives are cluttered with literary allusions, puns, what we would call 'flowery speech', elaborated often to the point that it is almost gibberish. Not this one. There were virtually no throw-away glyphs."

All groups, all ships, all units: the Piraean Butcher has returned with a freshly sharpened knife.

"I'm not sure what the reference to 'the Piraean Butcher' means, but they are clearly upset over a 'freshly sharpened knife'."

Spare no efforts to locate the GETG survey ship Aquila Proesti. Do not engage unless victory is assured. Report its location directly to the High Command first, and to your superiors when circumstances allow.

"Somebody is very agitated. There are the mandatory blessings upon the princes' heads, and the message ends."

"Do you get a sense of 'surprise' from this message, Doctor?" Amil Coram asked.

"Oh, definitely," Demaris confirmed. "I used the verb 'return', but there were some metaglyphs attached that almost caused me to use 'resurrect' as in 'return from the dead'. Who is this 'Piraean Butcher' and why is he causing so much consternation?"

"She," Coram corrected him. "The 'Piraean Butcher' is a 'she': Irina Dzudek. When she commanded the 23rd Rangers, she caused them constant consternation. Why would they think of her as 'dead'?"

"I'm only guessing about those metaglyphs. They could have meant return from virtually anything — exile, perhaps."

"What's your best guess, Doctor."

There was a long pause while Otho's brain searched for a connection. "Return from the dead."

—==++++==—

Aquila Proesti materialized 100,000km off Impor and quickly scanned her near-space for possible threats. Finding none, it issued the socially-mandatory greetings to the Stewards of Impor, then immediately hailed 'Hot Stuff'. The hail was answered by the dockmaster at Impor GTS-6 who informed them that Hot Stuff's master had returned to the surface and was not expected back aboard for several days, then carefully explained that Hot Stuff was not a military vessel that they might expect to be constantly ready for action

and was, in fact, too small even to live aboard. Further inquiry revealed a more precise location on the surface where Hot Stuff's master might be located. A landing party was sent to look for him while the ship waited in a permanent red-alert.

Because of Impor's trading practices (or, rather, the lack of them), the arrival of a ship, especially a warship, was something of a rarity. Many Imporads knew of Coridasta's arrival, and some knew of its interest in Aguila Proesti. Regrettably, no one felt that connecting the two would be a good thing and so the existence of Coridasta in the sector remained unspoken. But if the Imporads marveled over the arrival of two ships in as many weeks, they were due for an additional surprise.

Within a day of Aguila Proesti's arrival at Impor the Galactic Congress cruiser 'Honor Bound' also appeared in Impor's sky. The instant Honor Bound materialized, Aguila Proesti slipped its mooring, armed all weapons, and moved away from the GTS under reaction power, ready to do battle if that became necessary. In these times no ship would any longer be presumed to be either enemy or friendly.

The face of Admiral Kurt Gervao appeared on Aguila Proesti's viewscreen in response to a hail. "Captain Dzudek," he addressed her formally, "it is very good to see you again. You terminated your mission prematurely, then?"

"And it's good to meet you again, Admiral Gervao. However, from what I can see, my mission was terminated both prematurely and far too late. How did this happen?" she asked.

"The fortunes of war, Captain. The fleet was in the wrong place and the Gra were in the right place. Such things happen and are always tragedies when they do. Such ships as are left do what they can to stall the Gra advance, but it is clearly, now, only a matter of time before the last of our vessels succumb.

"My sensors tell me you are rather heavily armed for a survey vessel. How were you able to re-fit now that there are no operational Naval Depots?"

"We were fortunate to number among our academics Petr Alioth whose grasp of high-energy physics is, without exaggeration, extraordinary. What your sensors read as VTs are actually Petr's creations — as much like Fleet-issue VTs as we were able to make them. Very close to specs, but not exact —

"What brings you to Impor, Admiral?"

"The turn of the jogs, Captain, a very fortunate turn of the jogs. Would you and your Mr. Alioth care to join me and my staff for dinner?"

"I will certainly be there. Shall I ask Petr Alioth — or tell him?"

"I would be very disappointed not to meet your remarkable academic —"

"Then, we'll see you for dinner."

The admiral's launch slipped into its slot in the after hangar deck, the cargo door swung up and out of the way, and Irina Dzudek stepped down to floor level. Admiral Kurt Gervao was there waiting to welcome her.

"No Petr Alioth?" he asked.

"Petr is hard at work on a project for my Chief Engineer and begs your indulgence. There will be many opportunities, I am sure, for you to meet him later."

"Perhaps it's just as well. This promises to be a rather unpleasant night. I had hoped to spare you much of that unpleasantness, Irina. That's why I sent you away, but like a fling-stone you keep returning. Very well, then, we might as well get started. Come with me." He gripped her upper arm gently to guide her through the portal which parted for them at their approach. As she stepped through, Gervao's grip was replaced by the gloved hands of Gra soldiers on both sides. The look on her face told Gervao that her surprise was complete.

"The Piraean Butcher," he introduced her to her captors.

"It won't matter," she told him. "Aguila Proesti is now but a small part, an expendable part, of a much larger force. You had better hope, Kurt, that you are long dead when the others catch up to you."

"On the contrary, Irina, I hope that I am in command when that happens, because that will be the final victory for the Gra, and it will be mine as well." Irina Dzudek wore a worried look. "The Gra are firmly in control. What's left of the Galactic Congress is no match for them. It's only a matter of time before we round up the last of the stragglers. That will start in two days, when all the Gra forces are in place."

She started to speak, but he continued: "I must admit you almost pushed our timetable back. If it hadn't been for a chance meeting with a Gra admiral last week, we might have sprung our trap with you on the outside. As luck would have it, he bent my ear over the outrageous good luck of Rifi Ballasteros, a 'nobody' in the annals of the Navy. For the longest time, I couldn't understand what he was talking about, and finally told him that Rifi Ballasteros was dead and asked how a dead man could be causing him so much grief. 'Well,' he asked me in return, 'who's in command of Aguila Proesti?'. Your own success has been your undoing, Irina. You should have stayed where you were."

The door slid shut behind him as he left. The Gra guard locked it.

Back on the bridge, he hailed Aguila Proesti. "Commander Iarva, Captain Dzudek and I are going on an inspection tour. I expect we will be gone four days, five at the most. In our absence, you have command of Aguila Proesti, but I want to find you here when we return. Is that clear?"

"Yes, sir. Is Captain Dzudek available? There are a few matters that require her attention before she leaves."

"Captain Dzudek has her nose buried in intelligence briefings. Whatever matters they are, they are now matters for your attention. You're in command."

"But —"

"You're in command. Just be here when we return." The connection broke and Elissa Iarva was left with her mouth agape.

"I don't like the sound of this," she said to no one in particular as she watched Honor Bound ease away from its mooring. "Nav, note HB's departure vector."

"Aye, aye."

—==++++==—

Rodina and Gedacta pulled alongside their prepared berths and Aloise Aliria shuttled over to Totter to confer with Amil Coram. She was able to report to him that Gedacta's refit was nearly complete, and that the ship was every bit as fast as Irina Dzudek had boasted. She told him of the revelations of the Jepperson engineers that the pumped-plasma drives were known by the General Staff to be faulty. "I took the liberty of sending one of our launches to Impor so that Captain Dzudek would be made aware of that."

"We'll soon be out of launches at this rate," Coram offered. "I sent two out, one to Impor and another to Pelause, with Spencer Carson, the academic, at the controls. It seems the Gra have learned that Irina Dzudek is in command of Aguila Proesti and they are anxious to put her out of business. I'm thinking of going to Impor myself just in case Dzudek needs some additional firepower."

"Forgive me for pointing this out, Commander," Aliria interjected, "but Captain Dzudek specifically ordered you to defend Teresa. You could, however, send me. Also, Gedacta will be fully ready to defend herself before this day is out, so there will be a 'Teresa garrison' even if Rodina is not part of it."

"That is a problem," Coram replied. "It's Totter's firepower I want applied to this situation. I would not like to put myself in the position of disobeying a direct order from the Madwoman, but — I could send you and Totter. Commander, swap your essential crew

with that of Totter and head for Impor. I will transfer to Rodina and continue refitting Gedacta for you."

"Sir, yes, sir."

The remaining academics were ordered to the surface and this time they went without quibbling. Avram Burnside was persuaded to accept the hospitality of the Institute for the Advanced Study of Linguistics, a symbiotic relationship in which the faculty and students got to study a new language and Burnside got the familiar comfort of an academic environment. Emmon and Janet took lodging in the town nearby.

—==++++==—

This was getting to be the norm, the Imporads thought. Before this last few weeks, the arrival of a non-Imporad ship was remarkable, and a non-Imporad warship visiting Impor was virtually unheard-of. When a Navy launch reintegrated just at the border of freespace, the only surprise left was that a ship that small had a hyperdrive.

Impor Communications Central acknowledged its greetings to the Stewards of Impor and there followed a brief high-speed coded exchange between the launch and Aguila Proesti, after which the launch snuggled up close to Aguila Proesti and was drawn inside its deflector wall.

"I must warn Captain Dzudek," the launch pilot explained to Elissa Iarva.

"Captain Dzudek is off-ship," Iarva explained. "What is it that you must warn her about?"

"The following message was intercepted by the ears:

All groups, all ships, all units: the Piraeon Butcher has returned (from the dead) with a freshly sharpened knife. Spare no efforts to locate the GETG survey ship Aguila Proesti. Do not engage unless victory is assured. Report its location directly to the High Command first, and to your superiors when circumstances allow.

"The Gra have figured out that Captain Dzudek commands Aguila Proesti And they are actively looking for this ship — and its captain."

"Captain Dzudek has just recently departed with Admiral Gervao on an inspection tour. We expect her to return in a few days. Indeed, had you arrived only two hours earlier you would have been able to deliver the message personally —"

"Aguila Proesti is a fast ship. I think we ought to try to overtake her. I was told it was of the utmost urgency that this message be delivered to Captain Dzudek at the earliest possible moment."

"I agree that the message seems quite urgent, and Commander Coram would not have risked a launch on such a long jump had he not considered it important, but I am under explicit — and very clear — orders from Admiral Gervao to remain at Impor until he returns, a few days hence."

"Then perhaps I can give chase. Do you know where they have gone?"

She glanced at her navigator. "Nav, where were they headed?"

"Sir, their departure vector will have them pass quite near Camarinetta."

The expression on Elissa Iarva's face was a mixture of deep concentration and worry. As she raised her head to voice her analysis, her Sensor tech interrupted. "Ship entering the system."

The small craft sent its greetings to the Stewards and, without waiting for an acknowledgement, immediately hailed Aguila Proesti. "Rodina launch terz to Aguila Proesti. I have an urgent dispatch for Captain Dzudek."

"Captain Dzudek is not available. This is Commander Elissa Iarva, acting CO of Aguila Proesti. Bring your craft alongside and moor. Meet me in the Captain's ready-room."

The two launch pilots rose as Elissa Iarva entered the room. She motioned them to their seats. "You first," she pointed at the new arrival.

"Rodina has retrieved Gedacta which was stranded when its hyperdrive capability failed. On board were six Jepperson engineers. According to the senior engineer, the hyper-drives on six GETG ships (including this one) were known to be faulty, and were —"

"Stop," she interrupted him. "Are you saying that we, Aguila Proesti, were deliberately sent across the Arm3 gulf with faulty equipment?"

"Yes, sir."

"Who knew about this?" she demanded.

"That's the second part of the message: we believe most or all of the Navy General Staff knew: Admirals Kor, Perrel, Gervao, Lysaria, and Tassid. For the present, they should all be considered suspect of treason." Elissa Iarva's head sank into her hands. "What's the matter?" the courier asked.

"Captain Dzudek left not three hours ago in the company of Admiral Gervao. We must presume she has been captured by enemy forces."

"Then I have failed," the launch pilot muttered.

"Perhaps not," the other launch pilot offered. "Honor Bound is an old Pizat-class cruiser. It can't possibly be capable of better than D1.2. My launch is faster than that. I could catch them before they reach Camarinetta."

"And do what?" the other pilot asked.

"Slow them down — stop them, perhaps. My launch carries twelve of the 30-kilo VTs. If I can deliver them all —"

"If you can deliver them all, it will be barely enough to annoy Honor Bound. They'll fry you."

"We have three more launches," Iarva said, "and yours, all equipped and armed similarly. Twelve 30-kilo torpedoes might not be effective, but sixty would certainly make a lasting impression. Regardless, you're not going to chase Honor Bound. Aguila Proesti will. At D1.6, we can overtake HB before the day is out. I want you to alert the Pelause garrison. If things go badly, we will need them to finish what Aguila Proesti starts. Shove off."

Fletcher Penta and Petr Alioth were called before Commander Elissa Iarva and told: "Aguila Proesti may not come back from this mission. I want both of you off this ship in ten minutes with whatever gear you can round up in that time. If Aguila Proesti does not return for you, you will have to make your way home or wherever else you choose to go. Is there anything you need from me before you depart?"

Petr Alioth spoke: "Do we keep our weapons?"

"I think that would probably be appropriate. Yes."

"Then I have to swap out my blaster. It isn't working."

Elissa Iarva activated the comm unit on her desk: "Armory, have a spare blaster brought to Petr Alioth's room immediately." *Armory, aye aye.*

They made Elissa Iarva's deadline, but only just barely. A pair of launches boosted away towards Pelause at the same time Aguila Proesti departed at maximum drive for Camarinetta. From their viewport on Impor GTS-6, Fletcher Penta and Petr Alioth watched their comrades go off to war.

—==++++==—

Totter's launch materialized on schedule, and Spencer Carson breathed a sigh of relief that whoever had programmed the flight plan

had done it correctly. For the past 32 hours he had watched hyperspace roll by the launch's viewport and slept and ate sparingly.

The small craft was well-armed, Spencer knew, and he could defend himself adequately against anything up to a capital ship. The likelihood of his encountering anything of the sort was too small to warrant a moment's worry.

His craft's beacon had begun transmitting immediately on transit to normal space and it was not long before Willi Gulassine answered it.

"Mr. Carson, I didn't realize you were a qualified launch pilot."

"And when you see how I handle this craft, Willi, you'll realize you were correct. Give me a vector, please, for the Empress, and stand by to receive a coded message from Commander Coram." He laid in the course they gave him and a few minutes later he was lining up for the Empress's hangar deck. Coram's message was already decoded and in Willi Gulassine's hands. Carson was met and escorted to a briefing room. He barely had time to find a chair when Willi Gulassine and Edan Garonne entered the room accompanied by two others, clearly twins, but the first instance of twinning he had so far seen among the Risi. He extended his hand to the nearest who recoiled and reached for his blaster. "It's a friendly gesture," Willi Gulassine assured Gavin in the burbling Risi dialect they shared. "Take his hand, say your name."

Gavin Larossa reached out and clasped Spencer Carson's hand. "Gavin Larossa, first officer of Coridasta." Feni Larossa repeated the gesture, offering his own name and title.

"Spencer Carson. I no longer know what I'm doing or why." Gavin and Feni looked at each other and exchanged the Risi equivalent of a shrug.

"Commander Coram sends his compliments and wishes you to know that the Gra seem to be aware of Irina Dzudek's presence in the sector. They have issued orders to all units to be on the lookout for Aguila Proesti. The orders were 'do not engage', so they also seem to have developed a healthy caution as regards the Madwoman —"

"They've had that for a long time," Gavin Larossa offered.

"—and they also know that she's 'back' (their term) which says to me that they knew she was gone," Spencer added. "The translators at the Institute also suggested that the Gra might have been somewhat surprised at her being 'back', because the term they used was akin to 'back from the dead'."

"Does Commander Coram have any suggestions as to how we should proceed on this information?" Feni asked.

"Unless there is something in the dispatch I passed to you, there are none that I know of. My impression is that Amil Coram's style is very fluid — you should proceed as you believe circumstances warrant."

"Then, I think we ought to move the garrison to Impor and rejoin Aguila Proesti," Willi Gulassine suggested. "Someone needs to warn Aguila Proesti of the Gra intentions."

"I'm certain they already know," Carson told him. "Mine was the second launch sent out with this message. The first went to Impor."

"In that case, we shall wait for instructions from Impor."

They didn't wait long. Carson and all the senior officers were at dinner aboard Alamir when the entire Pelause garrison went to yellow alert, slipped to 'as you were' when the incoming vessels were identified as launches from Impor, boosted back to red-alert when their message was received.

The launches were taken aboard Alamir. Officers and crews returned to their ships to prepare for battle.

"At 01.6, Aguila Proesti has already intercepted Honor Bound. Whatever the outcome of that encounter, we can only be the 'clean-up' crew. No glory there, but we must go to finish what was started or to rescue what's left."

Empress of the Grass, being the slowest and least heavily armed, was assigned to keep post at Pelause. Coridasta, although still not completely repaired, could nevertheless keep pace with her sister-ships and the three: Coridasta, Palamaus, and Alamir departed on a course to intercept Aguila Proesti.

—==+++==—

Willi Gulassine stepped onto the bridge. "Status?"

"Four small ships — not warships — reintegrated a few minutes ago and have been hailing Coridasta," the tech told him.

"Ship-to-ship — Who calls Coridasta?" Willi demanded.

"This is the yacht 'Broken Promise' out of Impor. We are accompanied by the yachts 'Tradesman', 'Payback', and 'Second Mortgage'. We've come to offer assistance to Coridasta if it's going to go against the Gra."

"How would such small ships help a warship like Coridasta?" Willi asked them.

"We have blasters, all of us."

"Illegal weapons? How is it that you have blasters?"

"There are ways," they told him, "and now that there is no Galactic Congress to protect us or punish us, it's a good thing we do have them, isn't it?"

"Warships have deflectors. Do you?"

"No."

"You wouldn't last a minute in a battle — how would that help us?" Willi sneered dismissively.

"If we distract your opponent for a minute," one of them retorted, "it's a minute more you have to complete your attack. We have no illusions about our longevity in a battle, but if our presence swings the balance of power away from the Gra, death will be a small price."

Empress of the Grass lit up, revealing its position. "Come alongside."

19 - VENDETTA

"Commander, I have Honor Bound on sensors. It is accompanied by three other objects. We are closing and should be in range in less than thirty minutes."

"Very well," Elissa Iarva ordered. "All stations, stand by. We are closing on Honor Bound."

"Commander, Honor Bound is hailing us."

"No reply," she told the communications tech. Turning to her tactical officer she commanded: "Make the launches ready. They'll only have one opportunity for surprise."

"Sensors report Honor Bound is now accompanied by four objects, probable Gra warships."

"Let me know as soon as you can tell what they are," Iarva ordered.

"Affirmative: two light cruisers have detached from the main body and are now closing rapidly."

"Stand by evasive-A. VTs, target each with a burst of six. Deflectors to 'overload'."

"Deflectors at max, aye — VT-range in six — five — four — three — two — incoming sixteen warheads — one —"

"Return fire. Evasive-A," Iarva ordered. Aguila Proesti dropped out of hyperspace, swung hard left, and was about to jump clear when the first Gra torpedo arrived, impacting hard on the starboard deflector which collapsed forthwith. The second torpedo skipped off the forward deflector stressing it but not crippling it completely. As Aguila Proesti jumped into hyperspace, a third torpedo punched a hole clean through the main living quarters, exposing several decks to vacuum.

Of the twelve torpedoes launched by Aguila Proesti, four completely missed the first cruiser, but the two that did connect fried its field generators, and it dropped out of hyperspace. Three torpedoes missed the second cruiser and three did not. The first impact put its forward deflectors on overload, the second took them down, and the third fractured the ship into three pieces, each essentially harmless.

Aguila Proesti resumed pursuit as the crew hurriedly patched damaged systems.

—==++++==—

Coridasta, Palamaus, and Alamir dropped out of hyperspace near what they had calculated as the likely intercept point of Honor

Bound by Aguila Proesti expecting to find debris. What they found instead were several residual plasma tracks that they interpreted to mean that either Aguila Proesti had intercepted Honor Bound later than expected, or it had been destroyed in an earlier engagement and these were the tracks of Gra vessels. Whichever it was, their path lay toward Camarinetta. They all turned toward Camarinetta and went to maximum drive.

—==+++==—

With its field generators down to 80% efficiency, Aguila Proesti could make only $\text{D}1.25$, so its huge speed advantage was lost until the generators could be repaired. It was still faster than Honor Bound, but now only by a little.

Honor Bound's two remaining escort vessels seemed disinclined to challenge the little ship that pursued them, especially after watching it defeat two light cruisers head-to-head. Slowly Aguila Proesti closed the distance to Honor Bound and to Camarinetta.

"Honor Bound hailing us, Commander," the communications tech informed her.

"Visual," she ordered. The faces of Admiral Gervao and Irina Dzudek appeared before Elissa Iarva.

"Commander Iarva, why have you ignored my orders?" the Admiral demanded.

"I'm quite sure you understand why we are here, Admiral Gervao," Iarva challenged him. "The Gra do not escort their enemies. I will allow you to surrender your vessel if you do so immediately. Otherwise, I shall have to destroy it."

"Irina," Gervao ordered, "tell your subordinate to break off her attack."

Irina Dzudek stepped before the view screen. "Commander Iarva, are you at all unsure regarding the rules of engagement?"

"Not at all, sir," Iarva responded.

"Very well," Dzudek acknowledged, "you may proceed." Without another word, a Gra guard pointed his weapon at Irina Dzudek's head and fired.

—==+++==—

"Debris field ahead." All three ships dropped out of hyperspace and began an immediate search of the area. They found three drifting fragments of a Gra light cruiser, and a second light cruiser largely intact but without a registering drivecore. As the three ships materialized, the intact Gra cruiser turned and went to full power in an attempt to escape. Alamir overtook it easily and dispatched it with a single torpedo while blasts from the other ships wiped out the remaining cruiser. Then they resumed pursuit.

Two hours later, they came across the second debris field. As the three ships reintegrated they were hailed by two Confraternity launches. Palamaus retrieved the launches and the three ships resumed pursuit, but the plasma tracks ended with the debris field.

"What happened out there?" Edan Garonne asked the launch pilots.

The lead launch pilot started to explain what had transpired in the past half-hour: "When we were within striking distance, we put the 'Carson maneuver' to the test: the three ships were launched, fully-loaded, from the forward hangar deck. The launches can sprint at near $\text{D}1.5$ for short distances, and at that speed it's very difficult to get a decent shot at us. As we flashed through the enemy formation, we dumped every VT we had at them. Honor Bound made a lucky shot and hit one of the launches, but it was too late: Honor Bound wound up with no deflectors and no field generators — a crippled taug. One of the cruisers lost its deflectors and one engine — must have taken some drivecore damage, too, because it dropped to sublight with Honor Bound. Aguila Proesti took them both out with a single VT each, but the other cruiser got off without any damage, circled around and came at Aguila Proesti from the flank. It got off four clean shots at Aguila Proesti before Iarva could return fire. Aguila Proesti must have taken a lot of damage because it only fired twice before the Gra cruiser punched through to the power relay and it was gone."

"Well, where's the Gra cruiser?" Feni Larossa demanded. "There's no plasma track leading out of the debris field —"

"Oh, it's gone, too," the launch pilot told him, a hint of a smile creeping onto his face. "Those Gra, they are slow learners. They stayed around to survey the damage even though their deflectors were near-useless. Really stupid — Aguila Proesti had ejected hundreds of Alioth traps just before it took its last hit. The Gra cruiser wasn't even fully stopped when the Alioth traps got to it. Poof! They probably never knew what hit them."

"And Dzudek?" Feni asked.

The launch pilot shook his head. "She ordered the attack. The Gra executed her for it."

Totter disengaged hyperdrive and reintegrated spot on the edge of Imporad freespace which earned its navigator a 'well done' from Aloise Aliria, but not before its deflectors were at maximum. Scanning the area revealed no sign of Aguila Proesti, so its hail to the Stewards also included a query as to Aguila Proesti's location.

"Aguila Proesti deployed eleven hours ago in pursuit of Honor Bound that departed four hours prior to that," she was told by the harbormaster. "There have been a great many arrivals and departures recently, including several hyperdrive-capable launches, and no one seems particularly inclined to tell us what all this activity is about. Would you care to enlighten us, Commander Aliria?" he asked on behalf of the Stewards.

"The Gra are about to launch an offensive of substantial magnitude," she informed him grimly. "We have reason to believe that removing Irina Dzudek from operational command of Aguila Proesti is key to their plans. Further, Admiral Gervao is suspected of being in league with the Gra. If Irina Dzudek is pursuing Honor Bound, that's good news for us, bad news for the Gra — and Gervao. Can you give us a departure vector for Aguila Proesti?"

"Both ships were bound for the Camarinetta hub," the harbormaster told her. "But Irina Dzudek was not in command of Aguila Proesti when it departed. Our logs show that Commander Iarva was at the helm. We believe Captain Dzudek was aboard Honor Bound. But, please, can you tell us more about the suspected Gra offensive?" he begged.

"You should expect an unpleasant visit from the Gra perhaps within a day," Aliria warned, "two at the outside. We can offer you little in the way of comfort or support. I suggest you send as many of your militia vessels into freespace as you can manage, and tell them to avoid contact with Gra forces to the limit possible. They should take as many of your people to safety as they can hold. Aguila Proesti seems to have placed into your near-space several hundred devices that will attack Gra warships. If the Gra visit Impor, they will be unpleasantly surprised at the greeting they get from them, but unless those devices wipe the attackers out, the remainder can be expected to be thoroughly displeased at your lack of hospitality."

"Many of our militia vessels have deployed to the vicinity of Ruel, Pelause, and Piraeus in an attempt to locate and join with Coridasta," he finally admitted.

"Coridasta is in the area?" Aliria's heart leapt at the mention of the Ranger ship that had figured prominently in the many stories Dzudek had related during their travels. "That's wonderful news. When did you last see Coridasta?"

"It was here barely a week ago, uploaded dispatches, reprovisioned, then moved on," the harbormaster told her. "Hot Stuff

brought news for them from Teresa. They told Hot Stuff they would be cruising near Ruel, Pelause, and Piraeus, so that's where our militia has gone."

"Ah," Aliria exclaimed, "so, that's who Hot Stuff was working for! Get the rest of your assets to safety. You're out of time. Pelause is as good a place as any — better than most, if you catch my drift. Totter is bound for Camarinetta fastest. We'll be back with help if we can find any. Hang on as long as you can."

"What about the stragglers from Aguila Proesti?" the harbormaster asked.

"Which stragglers?" Aliria asked, shocked that anyone of the crew would be left behind.

"Aguila Proesti left two non-combatants behind when it departed, Petr Alioth and Fletcher Penta. Should they go or stay?"

"They're on their own," Aliria decided as the thought flashed through her mind that they would be no safer aboard Totter than on Impor. "They can go or stay as they see fit. Both courses are equally dangerous as far as I can see. If we can we will come back for them."

"Fair winds, calm seas, fare well, Totter," the harbormaster wished them. Totter swung onto a course for Camarinetta and flashed into hyperspace.

—==++++==—

Willi Gulassine had a look of utter consternation on his face. "I don't want to deal in 'maybes'. I won't deal in 'maybes'. We will rig your vessels for pumped plasma, but you have to understand that this technology is not proven, can fail without warning, and can leave you stranded and powerless. Even broken, however, the Gra can learn a great deal from the modifications we will make. Your vessels must not, repeat — not — fall into the hands of the Gra. When the sensors detect six living organisms aboard any vessel, its drivecore will immediately implode. If that is agreeable to you, we will begin the modifications."

Twenty Imporads nodded simultaneously. Eight Imporad yachts were now tethered to Empress of the Grass -- Hot Stuff had arrived soon after the first four, and had three additional vessels, Shoestring, Bites Back, and My Own Business, in its cortege. The Empress's engineers were getting very practiced at converting drivecores. Before the day was out the little yachts, none over 30 meters, would be the fastest vacuumships anyone had ever seen. Each would carry between four and six 30 kilo torpedoes. With their speed advantage, blasters, and torpedoes, they could strike and retire to safety before a victim could line up for a shot. Willi Gulassine was already planning how he might put such ships to use.

—==+++==—

"Object approaching astern — in hyperdrive," the sensor tech announced.

"Scan it," Edan Garonne ordered.

"Aye aye — vessel is Totter. Totter is hailing us."

"Deflectors up. Visual — Totter, this is Palamaus. Where are you bound?"

"Palamaus," came the reply, "Totter is in pursuit of Honor Bound and Irina Dzudek. Are you aware of the situation regarding Admiral Gervao?"

"Admiral Gervao's 'situation' has been resolved" Garonne told Aliria. "Unfortunately, it also involved the loss of Aguila Proesti and its crew."

"How can that be?" Aliria gasped. "Honor Bound was in no way capable of defeating Aguila Proesti. What happened?"

"We now know that five cruisers can defeat one GETG survey ship when it comes time to do battle — if they're willing to die in the attempt. Come alongside and we'll brief you," Garonne invited her.

Aboard Palamaus, Aloise Aliria learned the full details of Aguila Proesti's last engagement and the death of Irina Dzudek as the four-ship fleet made its way to Camarinetta.

Twenty minutes out of Camarinetta, the ships began long-range scans of the area, concentrating on ship signatures. The returns were very confused — there seemed to be many vessels, but none registered as 'stable'. They all seemed to be in fairly rapid motion.

"If they're Gra vessels," Aliria offered, "they may still be having trouble with left-over Alioth traps. We put hundreds of them into the anchorage on our last visit, remember?"

"Hmm—" Gavin Larossa muttered, "if they're busy trying to defend against Alioth traps, they're probably working their short-range sensors pretty hard. I wonder how much attention they're paying to the long-range?"

"We'll know pretty soon," his twin thought aloud. "We'll be in range for wide-scan in a few minutes. Just in case we arrive unannounced, let's get those launches ready. I'd hate to miss an opportunity to use them."

Nineteen launches waited in the forward bays of four capital ships watching hyperspace swirl by, waiting for the signal to attack.

Around the Camarinetta anchorage, Gra vessels dodged Alioth traps and took the occasional shot at ones that came within range. The Gra gunners were getting pretty good at picking off the little torpedoes, too, but it was hard enough to hit one — the second almost always got through and did some damage. The only certain

method of avoiding a hit was to engage the drives for a microsecond, thereby moving the target a few dozen kilometers. That was enough to confuse the torpedo's rudimentary programming and delay them while they selected an alternate target.

"Captain," the sensor-tech reported, "I'm getting a huge return from the far side of the anchorage. I'd say it was Kitri-Uku if we didn't know that ship was destroyed. It may be Vistil-Uku or Gomor-Uku — possibly both — they're about the same size."

"That's the launches' target, then," Garonne announced. "Our main body will engage their main body in, around, and near the anchorage. The launches will sprint for the far side and engage whatever is giving us that heavy reading. Stand by. Comm, report any change in ship-to-ship message traffic."

"Message traffic is steady, captain, but I read a single ship moving away from the anchorage."

"Heading?" Garonne asked.

"Bearing almost straight for us."

"Signal Coridasta. Have them dispatch two launches for an intercept."

The frigate Timiqua, presumed lost in the earliest battle with Gra forces, but captured then by Gra forward units, found itself on the outskirts of all the activity at Camarinetta. Having been in the hands of the Gra now for over two years, the Gra overseers had mellowed considerably toward the Risi who, by virtue of their size and physical articulation, still had to do much of the handling of the ship. Now Timiqua sat tethered to a Gra vessel of a similar class and watching the near chaos within the anchorage.

In the wake of the report on what was now called The Bizal Incident, the fleet had been ordered to make the Camarinetta anchorage safe for Gra vessels even if it meant delaying the long-planned cleansing of Galactic Congress space. The past eighteen hours had been spent dodging Alioth traps, picking them off where possible, and other innovative tactics. One method that they would not use again was to pull the devices aboard. The Gra destroyer that had tried that was able to get off only the briefest report before it imploded: the Alioth trap had materialized on the destroyer's transporter deck, its programming had concluded that it was within the vessel itself, and gone into action: the torpedo crashed through a bulkhead, flew down the main corridor, broke through a second bulkhead to gain access to a vertical shaft, dropped to the Engineering area, snuggled right up next to the main Matter/Antimatter Transfer Conduit, and exploded, vaporizing the entire ship.

Timiqua's task was, nominally, to scan for Alioth traps and shoot them, but this appeared to be a very poor day for

marksmanship. Its sensor-tech completely ignored the four torpedoes headed straight for its partner-vessel and expressed shock and surprise when the impacts began. As the third torpedo struck, the Gra destroyer's deflectors collapsed. Timiqua transported across to that ship all seven of its Gra overseers brief seconds before the fourth torpedo found its mark.

Unattached now, and no longer strictly under Gra control, Timiqua turned and, doing as little as it could to attract attention, moved away from Camarinetta. As it increased its distance, it increased its speed, all the time keeping a wary eye for any pursuers. It was quite unprepared for a challenge from ahead:

"Timiqua, heave to for boarding."

So surprising was the order issued on a Navy channel, that Timiqua's captain obeyed. Instantly, two launches materialized off its quarters.

"I'm going to be boarded by the crew of a launch?" Timiqua's captain asked, astounded.

"Eventually — not yet. Timiqua, what are your intentions regarding the Galactic Congress and the Gra?"

"Regarding the Galactic Congress, we have no intentions, because the Galactic Congress no longer exists," Timiqua's captain told them. "This ship is barely what you would call 'armed'. We have no offensive armament whatsoever, and even our blasters have been altered to be ineffective against Gra deflectors. We see distance as our best defense against the Gra, so as regards the Gra, we intend to escape."

"The Galactic Congress exists, Timiqua, and daily it grows stronger. Very soon it will be more than a match for any forces the Gra are willing to commit to battle —"

"—and you're going to defeat them with launches that you have somehow rendered hyperdrive-capable—" Timiqua's captain scoffed.

"Run, Timiqua. We have no use for those who will not jump at the chance to restore their dignity. Fair winds, calm seas, farewell," and the two launches swung onto a heading for the rest of the fleet and headed back to rejoin the invasion.

—==++++==—

Within the anchorage only two ships actually had their long-range sensors active but no one was paying any attention to them. The nineteen launches arced around the outskirts of the anchorage to avoid detection by short-range sensors which certainly had to be working, and synchronized their arrival at their destination with the rest of the fleet. As the four ships of the Resistance sliced through the

main anchorage, Gra warships of all sizes felt the hammer-blows of Petr Alioth's deadly creations.

On the far side of the anchorage, nineteen launches converged on a pair of Gra battleships and four escort vessels. Ignoring the small ships, they concentrated their firepower on the Vistil-Uku and Gomor-Uku, the largest surviving Gra ships. Together, they fired 114 30-kilo torpedoes at them and continued on their paths not waiting to find out whether they had done any damage or not. The escort ships, noting the launches' speed of $\text{D}1.5$, did not even bother to pursue them, choosing instead to depart the area as quickly as possible.

When the battle was over, no functioning Gra assets remained in the area, ships of the Resistance had suffered only minor damage (none to the launches), and the Imperial Gra Navy was left unable to eat what was left of the Galactic Congress. *Revt-chiri-lak* had taken its toll by making them now too weak to survive. An estimated 38 ships from battleships to auxiliaries would disappear from the Gra inventory that day, and the Second Battle of Camarinetta would ever after be the high-water mark of the Gra advance into Confraternity territory.

The crews of the four escort vessels that had been unable to protect the battleships would report to the High Command that Princess Vistil's nameship and Prince Gomor's nameship were holding their own against the pestilential little devices that had so slowed the Gra advance. Everything was under control until hundreds of small craft each fired dozens of torpedoes, collapsing the defensive deflectors, and exposing them to torpedoes from the second wave. The Lord Admiral would thank them for their report. Then they would be given to the Royal thull for food. The last of them would live another eighteen days before becoming the subject of a territorial dispute between two adult female thull.

—==+++==—

A week after the Second Battle of Camarinetta, the yacht Tradesman on a routine patrol near Cost discovered the cruiser Guidestar, Admiral Lysaria's flagship, and the cruiser Pathfinder, Admiral Tassid's flagship, tethered to an asteroid. Two days later, Rodina and Coridasta arrived to begin salvage operations. The ships were unmanned, but still had their deflectors raised indicating the ships had been parked and the deflectors raised by a remote voice-command. The planetary authorities at Cost professed no knowledge of the presence of official visitors, but a scan of the planetary database for 'Lysaria' and 'Tassid' turned up an entry for 'Raitu Tassid', the Admiral's wife, as owner of a remote villa high in the Eastern Mountains.

A sensor-sweep of the mountain-top villa revealed a dozen people. All of them were involuntarily transferred aboard Rodina. They included both Admirals, their wives, several children, and two officers from Pathfinder. The wives and children were taken to the crew's mess, the two officers were pulled aside for separate questioning, and the Admirals were left to Aloise Aliria and Feni Larossa who had transferred over especially for this event.

"Gentlemen," Aliria began, "I want you to understand that you are under arrest for high treason and other charges which may be preferred later. We believe that you, among others, are responsible for the defeat of the Galactic Congress by the Gra, and that your actions were directed toward that purpose. That is, you collaborated with the Gra. I tell you this so that you will not be under any illusions as to our seriousness.

"Admiral Tassid, what brings you to Cost?"

Tassid turned on Aliria with a vengeance. "I don't know who you are or what you think you are doing, but I do not intend to cooperate with you or this so-called investigation."

Aliria pressed the TRANSMIT bar on the wall communicator: "Execute Admiral Tassid's eldest daughter," she ordered. A sound like a blaster discharging followed by a woman's scream came back over the communicator. Tassid came out of his seat like a madman.

"You barbarian!" he screamed. "Who gave you the authority —"

Aliria pushed him back into his seat roughly. "You will answer my questions. You will answer my questions. You will answer my questions or none of you will greet tomorrow. Don't tell me whether you understand or not. I don't care. I'm going to ask questions. You're going to give me truthful answers. When I think you're less than 100% truthful and open, your families will shrink. I trust the loss of your daughter will be adequate warning and that we will not have to repeat the lesson." Tassid just nodded, his fury barely controlled.

"First," Aliria continued, "you will each cause deflectors to be dropped on your ships and command locks released." First Lysaria and then Tassid issued orders to their ships' computers. Crews standing by confirmed that they now had access to the ships' systems.

"Where are the other members of the General Staff?" Aliria demanded.

"Gervao is attached to the local garrison as an advisor," Tassid told her. "Kor and Perrel have gone to U-Gra."

"Who else was a part of the conspiracy?" she pressed.

"There were no others," Admiral Tassid asserted.

"Do you expect me to believe that the Admirals' secretaries were not privy to the details?" Aliria challenged him.

"Whether you believe it or not, it's true," Tassid said, his voice thoroughly depressed.

"And your families?"

"They are not involved — at least I never involved my family. I don't know that I can speak for the others."

"Why did you do this?" she asked Lysaria.

Admiral Lysaria looked up at her. "Perrel assured us that a Gra victory would usher in a benign era and we could all live in relative peace. It seemed a fair bargain — we were, after all, losing ground steadily. None of us expected the complete destruction of the Galactic Congress. This wasn't what we bargained for."

"The 23rd Rangers always seemed to hold their own or better," Aliria shot back. "What of them?"

"Their success was due to one person, Irina Dzudek. She could read the minds of the Gra, it seemed. If she were ever lost in battle, we would have had nothing to bargain with."

"And — where is she now?" Feni Larossa teased.

"Now? Who knows? She was sent off on a survey mission — won't be back for two more years. That was part of the bargain with the Gra: she was to be retired."

"And how does that help your bargaining position?" The admirals just looked at each other.

"What do you know," Aliria continued, "about pumped plasma drives?"

"They're worthless," Lysaria told her. "The technology is flawed in ways nobody fully understands. The drives work for a while, then they don't, then they'll work, then they won't. They go through several cycles of breaking and re-healing, then they never work again. Completely unreliable."

"But you used them on some ships —" Feni prompted.

"Kor had them installed on a half-dozen of his GETG ships as an experiment," Tassid noted casually.

"—And then Irina Dzudek was sent out on one of them in the hope that she would never return," Aliria offered.

"Was she?" Tassid asked. "I don't know for certain that her survey ship was one of those equipped with the new drives."

"It was," Aliria informed them. "She found the problem, fixed it, and returned to find this — your legacy — a destroyed Galactic Congress."

"She's back? That's bad news," Lysaria mumbled. "The Gra will surely make an example of her when they capture her."

"There's no danger of that. She's dead, and Kurt Gervao with her," Aliria smirked, "and the Gra won't be capturing anyone anymore, or haven't you heard? The entire Gra fleet assigned to subdue our Navy was marshaled at Camarinetta when they were set upon by this ship and three others. A very few Gra ships escaped. The remainder are scrap."

"You defeated them?" Lysaria asked incredulously.

"Soundly. 38 Gra warships destroyed, none of ours," Feni told them.

"One last question: since the Gra seem to be among the poorest of tacticians, who planned the attack on Fleet HQ for them?" Feni Larossa asked, getting right into their faces.

"I don't know that any of us has that answer, but Perrel had to be involved. He commanded the defenses for all of Piraeus."

"That's all I wanted to know." Aliria turned away.

"What are you going to do?" Lysaria asked.

"We're going to track down the other two traitors and execute them. Did you have something else in mind?" Feni Larossa asked.

"What about us?" Lysaria asked, indicating himself and Admiral Tassid.

"You will have four hours to say your farewells to your families," Aliria informed them. "You are to be executed today."

"What of the 'charges to be preferred later'? Are we not to have a trial?"

"Why?" Aliria asked. "You've already admitted to treason. Besides, there is no judicial mechanism left to try you. You've seen to that by allowing the Gra to incinerate the Home Worlds and all the people who lived there. I'm only surprised you haven't taken your own lives to end the shame you have brought upon your families and your comrades. In four hours we will handle that task for you." She turned and left.

—==++++==—

On the 72nd day after the Second Battle of Camarinetta, U-Gra picket station 2117 reported an inbound hyperdrive echo and two frigates were dispatched to investigate. Moments later, station 2117 went silent, followed quickly by stations 2118 and 2119. Three more ships were dispatched toward 2120 to intercept whatever was taking out the pickets. When stations 2115 and 2116 reported their own 'inbounds', the entire Gra Home Fleet scrambled to repel the invaders. With all of U-Gra's defensive capability concentrated on a remote area of its picket line, the home world was unprepared for the onslaught of hundreds of anti-matter-tipped torpedoes. Within fifteen minutes, the entire surface of U-Gra was molten to a depth of 50 meters.

The Gra Home Fleet, racing home to halt the attack while there was something left to save, was caught in a crossfire set up by nineteen launches and thirty-four Imporad yachts, any of them faster than the fastest Gra pursuit ship. Those ships not destroyed outright were left crippled and were finished off later by the larger ships as part of a general clean-up.

In the ensuing days, nearby Gra outposts with lesser defensive capacity were methodically exterminated. Some Gra certainly escaped, but they must have been very few, and they would never again be a threat to any other system. Before three weeks had passed, it was fair to say that the Gra, as a species, had ceased to exist. The balance in Irina Dzudek's account book had reached zero.

20 - EPILOGUE

"Willi, you're one of the very few left with personal knowledge of the matter. What do you think?"

"The Terrans kept their side of the bargain," Admiral Willi Gulassine addressed them. "I think it is time we keep ours. There's not much left of the old Galactic Congress, but what's left exists thanks largely (if not entirely) to the help we got from just two of them, and because of them we now know there is a bright frontier for us no matter how much — or how little — of the old Galactic Congress is left. Emmon Mar once told us he thought the Terrans would be invited to join the Galactic Congress within a mere fifty years or so. In view of the invaluable help provided by Avram Burnside and Spencer Carson, two 'ordinary' Terrans, I wonder if Emmon wasn't being too cautious in his estimate. Are they not ready now?"

A murmur of approval rippled among the other admirals: Edan Garonne, Aloise Aliria, Amil Coram, and Feni Larossa.

"If Irina Dzudek were here, I'm certain — I'm almost certain she would agree," Willi continued. "Although she never much cared for Terrans — cultural semantics was not her most visible talent —" They all laughed, and Willi continued: "She once told me (in confidence, of course) that she hoped never to have to compete against the Terrans — or to fight them. One way to guard against that possibility is to burn the Prime Directive to the ground and destroy them while we have the chance. I have heard one or two suggest that as a prudent course. A surer way, I think, and one more in keeping with the principles we have pledged to uphold, is to become allies. I think we should recommend — no, I think we should insist that the High Council extend a membership invitation to the people of Earth."

And when the High Council finally met later that month, that was the 'very strong unanimous recommendation' of the Fleet Commanders. The High Council, after questioning Burnside and Carson at length, authorized them to carry the invitation home.

The admirals turned jogs to see who would escort their newest ambassadors, eliminating each in turn until only Rodina was left.

Emmon Mar became the High Council's liaison for Terran Affairs by default: he knew the most about the people of Earth and he had no particular desire to go back. While he admired their technological talents, he largely shared Irina Dzudek's unspoken feelings about them. And he doubted he could find a comfortable spot

to live on that frigid little ball — the Equator, perhaps, but he doubted it.

Fletcher Penta, guessing the value of his particular skills, convinced the High Council that, were the Terrans to accept the High Council's invitation, they would need substantial education regarding the linguistics of the Galactic Congress.

Petr Alioth, likewise, pointed out that the sciences of the Terrans were badly in need of an update, and that he was probably the best qualified, all things considered, to bring them up to speed. It would also, he thought, help him to forget the loss of Lya Tenai if he were up to his head in work, a prospect Earth promised as no other place could. He was sure he would have deep-fried potatoes with every meal.

Janet Mar's expertise in Cultural Semantics (among other things) made her an ideal candidate as the new Ambassador of the Galactic Congress, although she also had tucked away in her mind an idea for an experiment in Applied Genetics, and she hoped Spencer Carson might help her with it.

Avram Burnside was returning to a world he no longer knew. Oh, the geography would be the same, but he would never again look at a Physics textbook as he had done before. His personal copy of «Caparella» translated into English, never now left his possession. Yet he would be incapable of teaching what the book covered. Surely he would have a different career when he returned, but what it might be he dared not venture a guess.

Spencer Carson could see clearly, more clearly than ever before, what he would do on his return to Earth. The culturally-backward Terrans would be in a few dozen years the technological equals of the Galactic Congress. They had better become used to some novel ideas quickly or they would become like a child with a dangerous weapon.

—==+++==—

Rodina's shuttle number one was assigned to Carson and Burnside for their use bringing personnel to the surface and back to Rodina. Carson was by now a qualified shuttle pilot and Burnside could interface with Air Traffic Control. It was a perfect combination.

In mid-September 2106, Rodina took up a parking orbit over the equator south of Phoenix. Spencer Carson, Avram Burnside, and Janet Mar, accompanied by several assistants, boarded the shuttle and departed for Phoenix. Their orbital path brought them into Earth's atmosphere at high speed, but the deflector field around the ship protected them from the hazards of re-entry better than any material substance could. As they passed over Phoenix at an altitude of 45

miles, Spencer put the shuttle into a long-radius spiral to lose altitude, and Avram contacted Phoenix ATC.

"Phoenix approach, this is Rodina shuttle one, zero miles, flight level 2-3-5-zero."

The controllers working Approach Control looked from one to another. *Straight up?* their expressions said.

"Rodina shuttle, Phoenix approach, what is your transponder setting?"

"Phoenix approach, Rodina shuttle one is a spacecraft with no transponder. We are descending into Sky Harbor and our altitude is now flight level 2-2-5-zero, approximately 42 miles."

The controllers now were certain this was a practical joke. "Whoever you are," the lead controller spoke, "you are committing a federal felony broadcasting on a frequency reserved for aircraft. You're going to be reported to the FCC. Get off this channel immediately."

"Phoenix, shuttle one is descending into your airspace and will be there in twenty minutes. You can either take this seriously and plan for high altitude traffic over your tower or you can risk a collision. I suggest you take us seriously. Rodina shuttle one is flight level 2-1-zero-zero."

A controller grabbed binoculars from their place on the wall near the door and stepped outside to see what could be seen. He braced himself against a railing and leaned back to look straight up, zooming the magnification to 40X. After a few minutes of staring intently at the sky and searching for any sign of movement, he caught a glimpse of something circling like a hawk, still very, very small but getting larger.

Back inside, he told his supervisor: "There's something up there. They could be telling the truth."

The supervisor grabbed the binoculars and stepped outside to see for himself. A few moments later he was back inside, and plugged his headset into its socket.

"Shuttle one, Phoenix approach. How much runway do you need for landing?"

Aboard the shuttle, Burnside turned to Carson with a quizzical look. Carson answered the unasked question: "No runway. I'll put it straight down into a 200-foot square."

"Phoenix approach," Burnside told the ground station, "we just need a 200-foot square as a landing pad."

"Roger that, shuttle. Directly south of the tower and north of runway 2-5-right is an empty area you can use as a pad."

"Acknowledged," Burnside confirmed. "Rodina shuttle one is flight level 1-8-8-zero."

When the spacecraft reported passing through 70,000 feet, the controllers began detouring terminal control area traffic wide of the center of the airfield except for take-offs and landings. Five minutes later, the shuttle settled into its designated landing zone. Almost immediately, airport personnel erected a low security fence around the craft and stationed guards to prevent unauthorized persons entering or leaving the area.

In the twenty minutes since Burnside first announced his intent to land, a contingent of Phoenix police armed with riot guns had marshalled at the airport to maintain order. Now with the craft parked on the tarmac, the police waited with bated breath for some sign of activity from the vehicle. A mechanical 'thump' announced the opening of the rear hatch which swung down and became a ramp. Carson and Burnside were the first out to the sunshine.

"Take it easy, guys," Carson soothed the police. "Let's not provoke an interplanetary incident that could turn out very badly for all concerned. Just welcome our visitors," and with that, Janet and her aides appeared in the hatch.

"Who's in charge here?" Janet asked.

A police major stepped forward and saluted her. "Major Phil Maxwell, ma'am," the policeman answered. "Welcome to Earth."

Janet smiled. "May I present you with my credentials?" she asked him.

Hearing this request, an employee of Immigration and Customs Enforcement appeared at the major's side. "Adele Furness, Immigration and Customs Enforcement, ma'am," the newcomer announced herself. "I would be pleased to receive your credentials and pass them on to the national authorities."

Janet handed her a large envelope of a plastic material which Inspector Furness opened. Inside were three documents: Janet's credentials in Risi, a translation into French, and a translation into English.

—==++++==—

The people of Earth were first stunned that there were intelligent species from other parts of the galaxy, then appalled. Put aside all the programs they had watched on television over the last 150-or-so years suggesting that Earth could not *possibly* be the only planet supporting intelligent life. Even so, they discovered that few of them had actually believed it. In their heart-of-hearts, they had always assumed that Earth was the *only* home of beings that might one day sail to the stars. Now they were faced with the knowledge that, far from being the only organisms capable of interstellar travel, they weren't even the first. It was a mortal blow to their high expectations.

A lesser species would have self-immolated or, at the very least, despaired so completely as to render themselves into third-class status. The Terrans bounced back surprisingly quickly. Over the course of four short months the news reports went from 'how could this possibly be?' to 'isn't this a wonderful opportunity?'. Before Fall had blended into Winter the mood of the Terrans had flipped 180 degrees. They now thought this was the best thing to happen to the Earth since Jesus (or Buddha, or Mohammed, depending on one's personal persuasion).

Between addresses to the parliaments and congresses of the several democratic nations, Janet and Spencer had not a moment of personal time to spare. Janet's task was introducing the remainder of the galaxy to the people of Earth. This was a formidable task: in every other culture in which this problem had arisen there had been a single planet-wide authority that had the (implicit) power to negotiate a treaty. When the UN had dissolved decades earlier any such authority had dissolved with it and nothing had arisen to take its place. 'Negotiating a treaty' had become a colossal task involving hundreds of individual ethnic groups. Janet considered this madness. Have these people never considered that they were a single species? What Janet failed to understand was that 'considerations of species' never entered their thoughts. She finally understood the meaning of the word 'alien'. The culture of Earth was, in every sense, a disproof of Empettira's monistic theory of planetary evolution: Terrans rarely, if ever, thought of themselves as a single species. The notion of 'nationhood' colored all their emotions as regards other Terrans, and this was completely foreign to everything in Janet's upbringing.

Spencer Carson, not simply a Terran, but a physicist by training, had a different point of view. He, alone, appreciated the oddities of Terrans' thought-processes and the potential for catastrophe of those processes mated to the alien technology to which they could become heir. The hubris of the early 21st century had, however, instilled a healthy fear in the general population and that

came with a caution that might possibly prevent them from making a deadly error — *another deadly error*, he corrected himself.

The Terrans, in turn, were inflicting their own changes on the Confraternity to which they had been invited, but had not yet joined. The people of the Confraternity almost universally considered themselves part of a whole, and 'crime' among them was remarkably low. As a result, they rarely questioned the assumption that personal weaponry was unnecessary and that only the military should have weapons. They considered the Imporads (who *always* went abroad armed) no better than outlaws and barbarians. After the Second Battle of Camarinetta where a few dozen Imporad yachts had swung the balance, that assumption began to unravel. When militia ships, piloted by 'ordinary' citizens, virtually single-handedly crushed Gra forces eight- to twenty-times their strength, those who felt weapons should only be in the hands of trained military suddenly found themselves in the minority; the position was no longer supportable in the face of overwhelming contrary evidence.

Now came the Terrans. Until the Peoples' Revolt, it was almost solely the Americans and Swiss who insisted that everyone should have the capacity for self-defense. When the venality and rapaciousness of governments became obvious — the real trigger of the revolt — nations throughout the world began to adopt policies that would make governments fear people rather than the other way around. The Terrans, ordinarily rather violent and crime-prone, suddenly saw crime virtually disappear when large numbers of people gained the facility to make crime, especially violent crime, too risky. It became, at that point, a matter of faith what one of their writers had pointed out almost two hundred years prior: *an armed society is a polite society*. At this point in their cultural development, there was simply no chance the Terrans would abandon their "don't tread on me" attitude. Ten years prior, the people of the Confraternity would have rejected them on that basis alone. Today...

All of which made Spencer's task that much harder. It's bad enough, he thought, that the average upper-class Frenchman could produce a Stinger missile from the hallway closet (although, to be honest, there had been no instances of their being used), just imagine when there's a blaster hanging from a hook in that closet — On the other hand, almost every Imporad yacht had a particle-emitter, and — what did they say? — 'nobody ever gets excited on Impor'. Maybe things wouldn't be so bad after all. He could cope with a world where people never got excited.

Only time would tell...