



BOOK TRADER

7.5

BEYOND CAPELLA

They gave him an expendable
ship, a screwball crew, and
an enemy nobody could locate.

by JOHN RACKHAM

We were a two-legged Terran virus, spreading virulently outward from Earth into the bloodstream of the universe. Planets and suns fell to our advancing design—until we came to Capella.

They appeared out of nowhere, flying in formation. Incandescent globes of light, smooth and featureless—they destroyed our scout ships and anything else we sent against them. Like a body attacking and destroying toxic invaders, we were decimated at every step.

Now we are barricaded from going beyond Capella. Is the universe fighting back?

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BEYOND CAPELLA

by JOHN RACKHAM

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THE ELECTRIC SWORD-SWALLOWERS

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I

ALMOST EVERYONE in the clubroom knew him by sight. A few knew him by name, well enough, even, to nod and speak. But none of them knew him really well. Edward Kent Kane was not an easy man to know. His lean and sombre face, the mask of a man long since disenchanted with life, discouraged familiarity. There were those, the curious few, who speculated that he was a frustrated man. Ten years in Space Service, five of those prewar, yet still only a lieutenant, nonspecialized! It was enough to embitter any man and, in a small way, those speculations were right. But that wasn't all the story.

Kane sat, now, at the little corner table he had made his own, and let the busy wash of conversation swirl around him, paying attention with only half an ear. It was all war talk; and here, in the clubroom and bar of the Lunar General Hospital sector of Copernicus, what else would one expect? He caught the word "patchy" from time to time, and it touched the ghost of a smile to his lips each time. Bits and pieces. Every man here carried some part, a limb, an organ, or tissue of some kind, that had once been part of some other, less-fortunate individual. In a way, these were the lucky ones, those who had been considered whole enough to repair, who would eventually be fit enough to return to the fray. Kane moved his right leg, felt a twinge, and wondered whose it had been before he got it. Lucky? It was all a matter of definition. The really lucky ones were those who managed, somehow, to be unfit for service, or exempt in some way—or those others who never knew what had hit them. Or women!

He looked around the smoky clubroom now, deliberately

counting up the females, those who served behind the bar, who scurried with trays, who mopped and wiped. And he added in, mentally, all those who formed the backbone of the medical complex that lay beneath one third of the vast crater; all the nurses and doctors and specialists—women! Forbidden, by international agreement, from taking part in the actual hostilities, from flying in warships that were necessarily crude and uncomfortable, from battles that were swift and hideously lethal, from circumstances which strained men and materials to snapping point, the women of the world had pushed and shoved themselves into everything else, determined not to be left out. Kane wasn't sure whether he envied them their exemption, or detested their insistence that they had to do whatever they could to help, but he did know that they were a constant affront to him.

They were even involved in the construction gangs, helping to repair shattered ships and to build new ones as fast as the laboring industries of Earth could turn out the materials. Eratosthenes, Earth's arsenal . . . Kane had passed through it a time or two, riding in on some war-torn ship, riding out again on a new one. Women everywhere, goggled and suited as they welded and hammered, or prim and efficient as they punched buttons and routed paper work through the machines of enumeration and selection. Eratosthenes. The entire crater was nothing more than a complex for extruding fighting ships. The name came out of the chatter nearby, and he sharpened his ears in momentary attention.

Two youngsters, arguing in that deadly serious manner that men in war devote to anything concerning their possible fate.

"I tell you they aren't building this one in Eratosthenes at all! That's the whole point. It's a secret can, the boffins' own, and they are shoving it together over in Kepler, right in their own backyard!"

"I believe you, Bill," the other replied, his tone indicating anything but belief. "I've been hearing that story about a new supership to whip the snakes every other week since

the day I joined. Some day it has to be true. This could be the day. And it's natural that it would be a big secret, because the snakes might find out. They have spies everywhere!" Kane identified the second speaker as one Jaime Alvarez, lieutenant, weaponry; a small, dark, and intense man with perpetual cynicism and a permanent smile. The latter, Kane knew, was the result of a flying fragment that had torn away most of Alvarez's lower jaw, and the new jaw, complete with teeth, was so much finer than his own had been that he couldn't help smiling to show his improvements. His own story, that was, and Kane admitted a grudging admiration for it.

His friendly opponent, William Keith Petrie, lieutenant, communications, shrugged cheerfully and drained his glass. "All right!" he said. "All right! Maybe the snakes do have spies here, everywhere—who knows? They might. We don't know a damned thing about them, you know that. Nobody knows anything. But I am telling you that they are building a ship, a real, one-hundred-percent genuine spaceship, over in Kepler. Damn it, I've talked to the girls who were doing it. Why would they lie?"

Mildly intrigued, Kane studied Petrie's ingenuous and indignant face keenly. Blond and handsome, given to enthusiasms, Petrie had the conviction that he had only to smile in the direction of any woman for her to melt towards him. Kane knew quite a bit about these two, about all the others who patronized the clubroom, simply because it was his habit to pay attention, to observe. And he had been trained to do that efficiently in the old days before the war, when it was still called Space Navy, when it was the cream service, when you had to be good just to get in. Nowadays, ever since the blasted war— He backed away from that line of thought and put his attention again on the idle dispute nearby, to see Alvarez laughing and preparing a crushing comeback. Petrie, sensing it, glanced hurriedly around for inspiration, caught Kane's eye.

"Hey, wait a minute!" he put up a hand to his friend. "Let's ask the old man. Old 'Killer' Kane!" Alvarez lost some

of his gleam for a second, as he turned to look at Kane. He shrugged fractionally, betraying his Latin origin and conveying, adequately, his apologies. Respect and good manners wear thin in the constant anticipation of death, but these men understood Kane's unspoken desire to be left alone, and Petrie wouldn't be acting this way without the one drink too many under his belt. It was all in that brief movement, and Kane got it, nodded fractionally back, then gave Petrie his cold stare.

"You want to ask me something, mister?" he murmured, and there was a hush out of all proportion to the words but acknowledging something in the tone; a hush that spread through the bar like a silencing ripple.

"Uh! Oh, yes." Petrie made a grin that wavered a little. "Don't you reckon it's about time the boffins came up with something super to beat the snakes, put a stop to the damned war?"

"War? What war?" Kane shook his head slowly. "Look it up in a book sometime, mister. A war is between two opposing sides, is something to be declared, with some objective, some point."

"Huh?" Petrie scowled in a vain attempt to understand.

"As you said, we don't know anything about the snakes, not a thing, except that one day when we went nosing about on the far side of Capella, we got clobbered by strange ships. And we have been going back and getting the same clobbering ever since. Five years, and we still haven't the sense to stay away from there. We still don't know anything about those ships, apart from shapes and numbers. Not where they come from, what kind of things fly them, nothing. Except that they object to us being there. Maybe that's natural. Maybe we ought to stay the hell away from there and leave it alone; maybe not. But don't call it a war. It isn't."

"You mean," Alvarez intruded incredulously, "we should just forget the whole thing and—just forget it?"

"You're out walking one day," Kane said, as if talking to himself, "and you come to a hornet's nest. Never seen one

before. You stick your finger inside, just to see. You get stung, badly. So you are now so mad that you keep right on doing it? You are going to get those lousy hornets, you are! War on them! How dare they object to your intrusion on their private territory?"

The silence in the clubroom crackled. Even the swirling smoke seemed to hang still. Kane felt it. He had expected nothing else. Petrie got his mouth shut, only to open it again in shrill disbelief.

"They have been smashing our ships, killing our people—damn it, you know! You've had your share! And you say we should just go away and forget all about it? What are you, some kind of pacifist? Or are you—?" Every man in the room knew that he was going to say "yellow." Petrie knew it too, but there was something in Kane's chill stare that stopped him, even though Kane urged him, softly.

"Go on, mister, say it. Why not go the whole hog and say I'm a spy for the snakes? That wouldn't be any more stupid than the rest of it."

"Don't mind him," Alvarez muttered hurriedly. "He's had too many. Nobody in his right mind would suggest that you're scared, or a traitor, or anything like that. But, man, we just can't back off from Capella now, not after five years of bloodshed and destruction! You can't mean that?"

"Why not?" Kane demanded. "Think it over. What do we want with that sector of space? There's plenty more. And we are in no shape to fight any war, no more now than we were when we started five years ago." He shook his head slowly, thinking back. "It was Space Navy then, just five years old. Unsure ships making risky jumps into all kinds of new places. Feeling our feet, just learning some of the hazards. Pioneers! We knew that our ships weren't good, were just the first fumbling attempts—like the early aircraft—but they could fly, they could jump, they cracked open the doorway to the stars, and we didn't want to wait for the improved versions we knew would come. Fight a war? We knew we were getting lucky just to survive as far as Centaurus, and then Alpha Lyrae, and Cygni. We were

just fumbling novices when we went blundering beyond Capella."

"Oh, I don't know about that—" someone started to object, from the bar, and Kane moved his eyes to quell that interruption.

"That's exactly it, mister, you don't know. The ships we had, prewar, were crude and clumsy, but they were better than the cans we are flying right now. Yes, better! And why? Simply because once we realized there was something there that dared dispute our passage we swung into full-scale war hysteria. Ship design was frozen, simplified down to the bare bones so that we can turn them out fast—so that kids just out of school can learn them off, so that computers can treat them as units in a calculus, so we can fight a war. A war? We have to jump all the way to Capella to engage the foe. We clobber some of their ships, they smash a whole lot more of ours, and for what? For all we know, we may be tangling with one of their minor patrols, or some outpost guard. What we do know is that we are running ourselves into the ground, and achieving not a damned thing!" He stopped, leaving a hush that was broken by one of the ladies attending bar.

"Lieutenant Kanel" she called, determinedly coy despite her advanced years. "A message for you. You're to report to Base Captain Alloway, Drafting Sector, right away."

"Thank you." Kane stood, trying his right leg more by habit than any need. His audience was on the point of breaking up. He gave them one last jab. "I've been shot at more times than anyone here. By the sound of it, that call means I have to go and get shot at some more. I shall go. Like the rest of us, I obey orders. But there's no law says I have to like it!"

He went away, limping slightly, a little angry with himself for having blown off like that. They were only kids, none of them over twenty-five, at most, and they had been thoroughly indoctrinated the hard way: by physical contact with the enemy. You might occasionally hear antiwar sentiments from new men, fresh from Earth and yet to know what

it was like out there. But the boys here were patchies, war-wounded; they knew what it was like to see those weird globe-ships erupting into the featureless black from nowhere. They knew that blood-chilling sensation of sheer alien awfulness, malevolence, evil, that seemed to come off those silent craft like some kind of intangible radiation. Kane knew it well, had felt it many times. He fully expected to feel it again. He had once read lines by Grenfell: "And when the burning moment breaks, and all things else are out of mind, and only joy of battle takes him by the throat, and makes him blind." That was true enough, but a sane man should think again, after the heat of battle, and realize what a gross insanity it all was.

He shook his head irritably as he paced swiftly along the rabbit warren of corridors to the Drafting Sector. You couldn't put old heads on young shoulders. But there were precious few "old" men with his kind of experience. Thirty years old, ten years continuous service, still fighting fit, still only a lieutenant. Kane smiled sourly at the thought that he was well-nigh unique. Any other man with the first two qualifications would be either a veteran—a euphemism for those men so battle-shattered in mind and body as to be fit only for the simplest holding-down posts, or senior enough in rank to be out of the firing line. Or dead, of course. He shook away that idea, too, and gave thought to Base Captain Alloway, yet to come.

A new name and a new procedure. Usually one received nothing more than a chit by messenger, announcing what ship to report to and when; and who bothered to decipher the scribbled signature on that kind of document? So it was in no way remarkable that the name didn't ring any bells. And the rank "base captain" didn't mean a thing. In the urgent need to accommodate itself to all nations and customs, Space Navy had converted to Space Service, and the proliferation of fancy ranks from captain on up was a subject for study in itself. Only the lower grades were hard and fast, without frills. Cadet, junior sub, sublieutenant, junior lieutenant . . . And then, generally, you started to

specialize in some branch or other, and you grew colored rings around your twin sunbursts to prove that you were expert at gunnery, or engineering, or navigation, or whatever. In due course, you acquired the half-bar, and then the third sun, and you were a commander—in a position to tell others how to do what.

Kane knew, in a vague, undefined fashion, why he had never been offered the advancement. The knowledge didn't bother him unduly, except to feel that he wouldn't have enjoyed it: telling other people what to do wasn't him, at all. But this personal interview, now, was something new. He wondered about it, and was still intrigued by the time he reached the main sector office and was told: "Go in there. Base Captain Alloway will see you in a moment."

Alloway looked inadequate behind his desk. A small, stout man with a permanently pink face and a tendency to stare where a look would have done, he gave Kane just one second, then went through the motions of handling papers for a while. Kane allowed him ten more seconds, then found a chair and sat. He pegged this paper pusher as one of the chairborne brigade, up by the back stairs and into a safe nook without ever having heard an angry shot.

"You may sit, Kane." Alloway looked sour. Kane kept silent, waiting. Alloway sniffed, reached into a drawer and drew something out, dropped it one inch from the edge of the desk by Kane's seat, left it there.

"You may accept that," he said, and Kane looked at it, at the three-suns-in-a-triangle insignia, and watched as Alloway produced another to put by the first. One for each lapel. He looked back to Alloway.

"Not like that," he said. "You'll have to explain a little."

"I am authorized and instructed to invest you as commander." Alloway made it distinct and explicit. "Do you refuse?"

"Well, now; if you push me into that corner, yes, I do. So?"

Alloway sniffed, looked sour, tapped a bulky folder on his desk. "I have your service records here, Kane. I've just

been studying them, particularly your personality profile. I must say your reaction is precisely what one would expect from the evidence. It doesn't do you any good, man!"

"You just tell me why I am being jumped a whole grade," Kane sat back, deliberately omitting any "sir." "There has to be a reason." Without being in any way aware of it, he had revived that same mild-steel tone of voice that had silenced the clubroom only a few minutes earlier. It stung Alloway into a brighter pink, turned his sour expression even sourer.

"You are in no position to demand explanations—" he began, and Kane started to stand, so he swallowed the rest of it. "Sit down, man! Oh, all right, if you must know!" Kane sat, a small part of his mind finally identifying the base captain's color codings as Strategic Sector. That was a laugh. Strategy, against an utterly unknown opposition? The ghost of a smile touched his face, and Alloway bristled. "You will please understand that anything said in this office between us is strictly off the record."

"You have your wires crossed. How can you promote me to commander, off the record?"

Alloway breathed hard. "I meant the explanation! Kane, this will go better if you allow me to explain my way. I have my orders. It is not my job to question them. Now then, you know regulations well enough, I assume, to realize that the rank of lieutenant commander is not enough to carry the post of command of a major unit?"

Kane stared at him, for once shaken out of his habitual calm. "You mean, to take command of a ship? Me?"

"That is what I said. You have been appointed to the captaincy of a ship, and service protocol demands that you hold, at least, the rank of full commander. Hence I am authorized to invest you in it. Is that clear?"

"Not yet." Kane's voice was still quiet, but it held a note that had been known to galvanize many a torpedo bay crew. "Now you really have to do some explaining. But good! What ship?"

"You wouldn't know it, Kane. It is a new and untried ship, something quite experimental. A prototype!"

Kane sat back, ordering himself to relax all over, driving out the sudden and unwanted upsurge of excitement that came. A new ship. Then the old clubroom rumor had finally come true! But like this?

"You made a start," he said, very gently. "Now let's hear the rest of it. All of it. I'm not sold yet."

II

"You know," Alloway leaned back in his chair and tried to look avuncular, "you're a remarkable man in many ways, Kane. As I say, I've been into your records. A regular. Five years service, prewar. Excellent records of performance, excellent. Almost brilliant. And quite a list of citations. Yet you are still only a lieutenant. Have you any idea why?"

"Possibly it's because I failed to crawl to the right people."

"That attitude," Alloway snapped, forgetting his pose for the moment, "has a lot to do with it. Apparently you consider yourself entitled to criticize, adversely, any and all of your superiors and the service in general, whenever you feel like it. And you seem much given to unorthodox, nonregulation, ideas and methods."

"I like getting results. I like methods that work. Those citations you mention weren't got on failures." Kane kept the quiet edge on his voice, and Alloway shrugged wryly.

"I'm not here to argue your unfortunate mannerisms. You're not in my department, as it happens. Anyway, what with your undoubted abilities, and the present state of crisis in the war . . ." He let that sentence go uncompleted.

Kane waited for him to woofle his way through to some kind of point. Crisis? There had been a crisis of one kind or another, regularly, every month since the first outbreak of conflict. Kane had learned to read that as standard propaganda fiction to keep the home audience on the boil. Capella was a long way off, and the war effort was costing

astronomical sums in manpower and material. Alloway meandered through some woolly statement about a new kind of weapon the enemy was assumed to have introduced, and Kane grew impatient.

"About the ship?" he prompted.

"A rather special kind of ship. For some time now the Scientific and Technological-sector of Strategic High Command has been working on a new and modified design. This is it." He shoved aside the dossier and produced another folder, pushed it across. "You'll have time to study it later. As a matter of fact, there isn't very much there that you don't already know. The hull is standard, as is the layout. The modifications are additional, and not shown there."

Kane took the folder slowly, not opening it. He was hooked, and he knew it. His recent determination to refuse withered away in the light of this chance to try out something new, but some caution remained. "What about a crew?" he demanded, and Alloway nodded to the folder.

"There are comprehensive lists in there of all the men presently available on this base. The full commission complement of the ship will be forty-four. Eleven officers and thirty-three ratings. For your purposes, for acceptance trials, you'll have fourteen, including yourself of course. That's all explained in there. You are empowered to select your crew from those lists."

"I can pick my own crew?" Kane was startled this time.

"It's unorthodox," Alloway admitted sourly. "But Scientific and Technological insisted on it." His expression made it clear that he regarded it as an insane notion. Kane frowned over it.

"Let me get this right. I have a ship, and a skeleton crew, for the test and trial run only, is that it?"

"That is the extent of my information. You are to take the ship, *Aspire I*, with a skeleton crew, as far as Capella Rear Guard H.Q., conducting tests and trials enroute. You will deliver it to Senior Fleet Commodore Prudden-Taylor, together with full records, data, and comments. What hap-

pens after that will depend largely, I imagine, on your performance and the results you turn in."

Kane picked up the folder now, weighing it in his hand, the full magnitude of the moment beginning to get through. Like many another, he had often speculated on what *he* would do if only *he* was in charge for a while, but the reality of that dream was a trifle overwhelming.

"I remind you," Alloway inadvertently answered a question he was just about to ask, "that this discussion between us is confidential, that you must exercise caution in the selection of your crew. No one is to know, prematurely, that this is anything other than just a new ship."

"I don't like that. You are asking me to con a lot of good men into risking their lives on a gamble. Who's to know whether the damned thing will even get off the ground?"

"You are willing to take it on, commander," Alloway pointed out. "Does your arrogance extend to claiming a monopoly on nerve? Your lists are comprehensive. You should be able to select enough men from them who are as willing as you are to try something new!" His turn to apply the cutting edge, and Kane acknowledged it ruefully. "In any case, you will be accompanied by a team of scientists who will function as observers and demonstrators for the new devices and innovations. They are specialists, intimately concerned with the new stuff, and responsible for it. They are willing to back their ideas the hard way. That should be good enough for you."

"All right." Kane gathered himself to stand. "How long do I have?"

"The quicker the better. It's up to you, but the outside estimate is that you should be ready to take off within forty-eight hours."

Kane was on his feet and turning away when Alloway recalled him and aimed a finger at the sunbursts, bright and shiny, still resting on the desk.

"You'll need these," he said. "Attention. Raise your right hand. By the authority invested in me—"

As Kane went slowly back along the corridors, sliding in

the careful pace that befitted Luna's reduced gravity, his mind simmered with plans and surmises. The size of his new burden lay like a vague lump over everything else. A green commander on a new and unorthodox ship could add up to a lot of trouble. All around that worry, however, grew a small fire of excitement. This was his opportunity to try out a whole host of new and original ideas he had nursed in his mind for a long while without ever really hoping for the opportunity to test them. Clutching the folder under his arm, he kept an eye open for a vacant briefing room, found one, settled down to study the stuff he had been given, and to plan accordingly. Half an hour later he was back again in the rehabilitation area that lay between the hospital complex and the drafting sector. A look at the time, and a swift guess, diverted him from the clubroom to the nearby cafeteria; but a fast glance around the room told him he was too early, so he backtracked and turned into the main gymnasium, a place he knew very well indeed.

He stood awhile, watching men struggling with various appliances designed to strain their new parts into working order, until he caught sight of a huge and splendidly muscled black man, wearing only brief shorts and supervising a small class in complicated arm movements. Kane grinned thinly and went over, the massive instructor turning to greet him with a brilliant grin. Diagonally across that herculean chest and well into the flat stomach lay a hand-wide patch of paler hide, silent testimony to the repair work that had been done long ago to Howard Harmer, lieutenant, engineer, and physical culture fanatic.

"Hey, Kennyl!" he greeted, dismissing his class with a wave, and carrying the gesture on into a swift feint at Kane's jaw. Kane parried instantly, aimed a left-footed kick that made Harmer swerve and duck away, and grin his sincere delight at the example of coordination.

"Hi, Howie," Kane chuckled. "One of these days you'll slow up just enough for me to connect."

"By which time you'll be too old to do anything about it. Come for a workout? How's the leg now?" Harmer stood

easily, poised, ready for another surprise attack, then his eyes noticed the new insignia. "Whoa now, just a minute there. Commander? You found out where they buried the body, Kenny?"

Kane chuckled again. He and Harmer had first met years ago, on the *Toyota*, the first of Earth's big ships to run into the enemy and come out on the winning side, albeit at the cost of massive damage. In some instant but undefined way the two had struck a bond of sympathy that had persisted ever since, although their meetings had been few and irregular. Perhaps it was that neither man had any use for convention or stock formulae, or simply that each was completely self-contained. Either way, Kane felt closer to this man than he did to anyone else alive.

"It's a silly story," he said, and his chuckle faded a little. "You don't want to hear it. Let it stand that I've been jumped. Howie, you're always saying that you'd give a lot to get out of this cripple-house and back on a ship again. Does that still go?"

"Sure does, but it won't happen. Man, power engineers are a dime a dozen. Any one of the kids coming into the service can do my job as good as I can. A power deck is a breeze, these days. But good physiotherapists are hard to find. So they hang on to me, you know that."

"Come and sit. I think I have something. Keep it under your wool for the moment, though." Kane took him aside and gave him the bare outline. "You see how it is? I don't know what the ship is going to be like, I haven't seen it. She may turn out to be a cow, a death trap, who knows? But if I'm taking it, I want a man down there on the power deck that I can count on, a man who knows the way it ought to be, and who will get on with it without having to be pushed all the time. It's yours, Howie, if you want it, and I won't say a word of comment if you don't."

Harmer beamed. "You got yourself an engineer, Kenny. When do I start?"

"Soon as you've eaten. Here," Kane thumbed through his papers, separated out a list and forms, "is your available

personnel. Pick any four, and Howie, pick four you know and can count on. You know what I mean. We're going to have to fly this ship with a third of a crew, so there'll be no room for fumlbers or trainees."

"I like it," Howie murmured, running a critical eye down the list. "Yeah, I know a few of these. John Fell, hah! Henri Calmet—he was on the *Quebec* with me. Oh, sure, I can get four out of these."

"I have now to pick myself a gunner and a good radio-man. I'll leave you to it, Howie. See you on board."

Harmer rose to attention, not altogether humorously, and made a salute. "Yes, sir!" he said, and Kane went away feeling a lot easier in his mind. The two men he wanted were seated in the cafeteria now, over in a corner. As he drew near, Alvarez was first to spot him and to nudge his companion. Petrie screwed his head around, took in the shiny new insignia, and said in a childish lisp:

"Look, it is a commander. See how the commander has one leg which wobbles. That is because he crawls so much. This is how one gets to be a commander."

"Let us invite the commander to sit and share our meal." Alvarez took up the mockery. "Perhaps if we are kind to him, the commander will tell us how he won the war!"

Kane stood by the table and stared down at them critically, estimating just how much alcohol they had ingested. It wasn't easy. He had listened to these two often enough to know that they were capable of pretending to be more stoned than they really were. But they had the qualities he wanted.

"I'm looking for two good men," he said, and Petrie shook his head.

"Careless of you. Lost two men already?"

"Two *good* men, I said." Kane pulled out a chair and sat. "But I'm not in a position to be choosy, so you two will have to serve."

"Not so quickly." Alvarez sobered up rapidly. "There is something here I don't care for. Sir."

Petrie shuddered, shook his head, peered at Kane with

startlingly blue eyes. "Can't say that I'm too happy about it, either. What's it all about, sir?"

"Pay attention." Kane had the folder tucked under his arm, title-side inwards to hide it. "I need a more-than-competent radio-radar man, qualified as navigator, also to double as first officer. Is that too big for you?"

Petrie blinked, shook his head again to clear it. "Me? Navigator, communications *and* Number One? You must be putting me on."

"Just answer the question. Can you do it?"

"I'll see you and raise you," Petrie retorted. "Yes, I can!"

"Fair enough. You, Mr. Alvarez. Gunnery officer, complete charge?"

"*Por Dios!* Very well, yes, I could do it. But—"

"Hold it!" Kane tapped the folder under his arm. "This is a new ship, due for trials. I've been appointed C.O. I'm picking a skeleton crew for the shakedown run. I need men I can depend on, men who know what to look for, who can work without having to be driven all the time. You two have been around, you know your stuff. What about it?"

"Me and my big mouth," Petrie groaned. "My God, a test and trial job. That means real work!" Alvarez registered compatible dismay.

"I can make it easier for you," Kane said quietly. "You can pick your own crew, between you. Six men, three for each turret. I have a list of the availabilities right here. Better?"

Petrie had shed almost all his fog now, and his face showed curiosity. "What sort of a deal are you trying to pull, Kane? Er—sir! Pick our own crew? What is this, some kind of elaborate rib?"

"I've saved the best part for the last." Kane slid the folder out from under his arm, laid it incognito on the table, lowered his voice just a little. "Just a little while ago you were helping to push that old rumor about a new ship, a new supership, a secret ship that the boffins were building in Kepler. Remember?" He skewered Petrie with steady stare.

"You wouldn't happen to have heard the name they were calling that ship, by any chance?"

"I heard they were going to call it *Aspire*, or something like that."

"Right." Kane turned the folder over to let them see the printed name on it. "This is it! *Aspire* the first. Now what about it?"

He watched both faces, but more particularly Petrie's, knowing that Alvarez would go along with whatever his friend decided. At the critical moment, without waiting for the open declaration, he said, steadily, "William Keith Petrie, I hereby appoint you to serve as First Officer of *Aspire I*, warship of the spacefleet of the United Nations of Earth—"

By the time he had recited the formula to Jaime Alvarez both men were cold sober and able to sign, to pay critical attention, to pounce on the lists and begin comparing experiences and names. Kane watched them, ate untastefully, and recalled what he had been told by a certain commanding officer, long ago. "The higher you get, the bigger responsibilities you carry, so shed all the little ones you can." After only fifteen minutes of low-voiced excitement and argument, both Petrie and Alvarez caught on to the same idea simultaneously. The Spaniard said it.

"You are playing this very craftily, sir. You have the command, but we select the men, and we stand the blast if anything goes wrong, eh?"

Kane smiled, a rare thing for them. "It's not like that, mister. You forget, I picked you two. I'm gambling that you'll justify it. I think you will, you catch on fast." He meant it as a compliment, and he went away leaving them slightly disconcerted, but feeling a lot easier in his own mind. Now he wanted to see the ship itself, and he had—estimating by his watch—something like three hours to go over it before the rest of the personnel arrived. Not long, but enough to give him a rough idea as to just what he had taken on.

Subsurface shuttle took him and his neat-packed "personal" bag to Kepler, his first visit to this, the acknowledged

center of the Scientific and Technological sector of Lunar Base. The trip gave him time to feel his new responsibilities again, and to harden some long-held opinions. Spit and polish, for instance, was going to be out. No technology so far had designed the torpedo cradle, corroder-launcher or engine room that functioned better for being polished into a gleam. "No make-work," he vowed, silently. "First we get the ship flying, and functioning, and good. *Then*, maybe, we can think about the pretty stuff!"

The transfer from the shuttle gave him a long view over the crater of the boffins and it differed considerably from Copernicus, which he knew well, and even more from the shipyard of Eratosthenes, which he knew even better. *That* was a permanent forest of standing ships and umbilical rigs, of giant gantry cranes and grumbling track-trucks. This, by comparison, looked disorganized and random, with oddly shaped girder-skeletons, and guides, dishes, and antennae of all imaginable shapes, protruding forlornly from the subsurface hives like a surrealist forest. But there was no need to ask anyone which was his ship. There was only the one, standing alone and strangely out of place by the far wall of the crater.

He took time to study it, to look for novelty; but even to his experienced eye there was little to see. As Alloway had said, the hull was the standard model. The only model, now, when ease and simplicity of construction were imperative. Take one stout tube, fill it with a power pile, generators, fuel tanks, workshops, main drive and steering vents, pack all the rest of the available space with storage batteries, and you had your main workhorse unit. Take three more tubes, longer, bigger, not so sturdy, and arrange them around the main unit at the apices of an equilateral triangle, and these were where men lived, ate, slept, and stood by their weapons; where you carried stores, and water tanks, and supplies. You braced the whole together with three sets of "Y" pieces, hollow struts that made narrow tunnels for access from one tube to another, and you had a ship. You named one outer tube the "Control Module," and, in

flight, it rode above the rest. From the control room, up front, you had "A" tube, down on the left, and "B" tube, down on the right.

"Except," Kane mused, turning away, "that when you are in dock the damned thing has to be stood on end, and everything is cockeyed." This was every spaceman's lament, and nothing could be done about it except to cut it as short as possible. He busied himself with arrangements for crew billets for the next forty-eight hours, for meals, stores, fuel, clearances, the hundred-and-one fiddling details that had to be seen to.

At last, he was free to get at the ship itself, along the subsurface tunnel and into the concertina-tube that was sealed to the main airlock. "My ship!" he thought, as he crossed the threshold, and wondered if he ought to salute, or something.

III

THE INTERIOR, immediately, smelled of fresh-cut metal and paint, with an underlying tang of plastic. It echoed. It felt cold and unfriendly, and awkward. He touched a hand to the metal wall, felt a very faint vibration. The airplant and circulators would be running, which would account for it. This, where he now stood, was a fuel tank, as was the "bottom" end of all three outer tubes.

He looked up along what would be a corridor once the ship was spaceborne, put his hand on the handrail, now doing duty as a ladder, and began to climb, slowly. His eyes were alert for small details, things like unsmoothed edges, neglected scraps of plastic laminate, missing bulk-head lamps—a common complaint—ungreased safety-door hinges, but he was pleasantly disappointed. The boffins had been thorough. On and up through the main water tank and the airplant, which was running, as he had assumed. Still up and through the food and light stores space, making sure the main hatch was secure. That one was always a

trouble. A great slab of metal thirty feet a side and curved to fit the tube, it lifted off whenever anything massive had to come aboard and was situated conveniently for straight-through access to the tunnel that led down into the power tube workshop; but it was a devil to reseat accurately. If it was botched, the least you could expect was constant overrunning of the airplant to make up for leakage; the worst was something Kane chose not to think about. Once, long ago, he had been one of the emergency gang who had to suit up and go into the grub-space to drag out the lifeless bodies of three men who had been in there when the "barn door" broke free as the result of an enemy strike. He didn't care to recall it now.

On up, still sweeping the scene with critical eye, into the main messroom, and stop to try to picture this as it would be when shifted ninety degrees around. He was mildly impressed. Shipyard Command seemed to have the idea that any metal box was good enough for men to eat in, and anything with flat surfaces in the appropriate places was good enough to serve as a chair or table, but this was, by comparison, lavish. There was sponge plastic on what would be the floor. The chairs and tables were civilized. And there were no less than three autochefs against the bulkhead. One of the minor irritants of ship life was the need to stand in line and fume whenever circumstances permitted a precious rest break, and many and rare were the dodges whereby one contrived to "get there first!" With three servers and only fourteen crew, Kane could scratch that small nuisance, at any rate.

On and up once more, and now he came to the cabin space. There were four, two a side. He reasoned it out mentally. One for the commanding officer, one for the two senior lieutenants to share. The four junior lieutenants would share the other two. And any cadets would have the privilege of slinging their hammocks in the corridor between. That would be with full complement. But now, he shoved open the door of the senior cabin and dumped his personal bag inside, that would be his. Petrie, Alvarez and Harmer

could also have one each. Luxury! He grinned wryly and went on to the last and most important section of the entire ship, the control room.

Now, at last, he felt a touch of awe—and humility. All this, and he would be carrying it on his shoulders. There was his control deck and chair, the seat of honor—and woe—with the main screen right before him, peripheral and astern screens clustered around, navigator on his left, gunner on his right, computer at his back, where he could swivel and study it, and swing back—Kane emerged from his semidaydream with a start and a sudden tingle of interest. That was *some* computer! He scrambled across to study it, cursing the wrong angles of everything, in his mounting excitement. Part of the wide board was quietly alive with some program or other. He released the lock on his chair, realigned it, sat and studied for a moment the chittering pattern of lights, not hoping to guess what was in hand but merely how much of the capacity was being used. It was a beautiful machine, taking his memory back to the halcyon days of prewar, when every flight was an adventure and the computer was one of the most important secondary items on any ship.

This was a digital-analog hybrid, and though there were some features unfamiliar to him, for the most part he felt at home with it. He looked about swiftly for the manual, found it hanging on a hook—that was familiar, too—and settled down to study it, skipping the routine stuff, searching for the bits he needed. His excitement grew. It was a *beautiful* machine. He was deeply engrossed in the tryout motions of patching in leads from the three control panels and humming under his breath, when he was jolted back into here and now awareness by a sharp and imperious question.

“And just what do you think you are doing?”

The heavy manual slipped from his fingers. He snatched at it, got it securely, swivelled in his chair, and saw her standing just by the hatchway, glaring at him. He took his deliberate time to study her, noticing first her chilly blue-

gray eyes, prominent cheekbones and chin emphasized by her stern disapproval, her piled masses of red-brown hair secured primly by a white band, going on to see that she was medium-tall, slim but mature, and clad in an all over garment of white plastic which she probably thought was businesslike but which heralded her shape far too obviously for his liking. An instrument dangled from a strap over her shoulder, there was a scratch pad tucked into her waistband, and a stylus poked into her hair. He guessed, wildly, that she was one of the construction team, possibly a supervisor.

"I said," she came closer, "what do you think you are doing?"

"This ship is supposed to be finished and in fly condition," he reached out and took up his cap from where he had discarded it, set it on his head. "So I'm afraid it isn't any of your business what I'm doing. Just for the record, my name is Kane, and I'm the commanding officer of this ship. Who the devil are you, and what do you think *you* are doing here?"

"I'm Hannah Kramer, and before anything else happens, I forbid you to touch or interfere with that computer."

Kane hung the manual back on its hook and stood. "I haven't touched or interfered with it in any way, yet!" he said, very quietly, "but I will, when and how I decide, Miss Kramer. You will either convince me that you have the authority to tell me what I may or may not do in my own ship, or you will get off it, right now!"

Her face and neck, and her arms from the elbows down, had a strange and not unattractive pearly sheen, and he expected to see it flush; but before it could happen they were both interrupted by the arrival of an elderly man, a gray-haired, peering little man, also in white coveralls.

"Ah, Hannah, you were right," he said, and turned to the two men who followed him. "A small demonstration of the fine setting of one of the factor-sensors, yes?" He came close, peered up at Kane's stiffness, and extended his hand. "How do you do, sir? Commander? I am Edgar Welby, in charge

of the team who will be coming along with you on our maiden flight."

Kane took the hand, which was far from soft, mentioned his name, and eyed the other two as Welby introduced them. "This is Dr. Bernard Kopal"—a broad-shouldered bear of a man with a huge paw and a grin—"and Dr. Marius Ninger." This was a lean and slight man, dark and sinister by design, although pleasantly smiling now. "I have degrees and titles too, of course," Welby shrugged delicately, "but if we are to work closely together, perhaps it would be better if we dispense as far as possible with formalities, don't you think?" His accent was a mixture of various things Kane couldn't identify, all overlaid on a basic British foundation. "I take it you have met Hannah?"

"We've met." Kane chose his words with care. "Dr. Welby, I'm like you in that I don't have a great deal of liking for unnecessary formalities, but there is one ceremony we have to get over and done with right away. I have some small information on you four, not much, but the operative point is 'four.' In other words, it seems to be assumed that Miss Kramer is one of your team."

"That is correct."

"You intend that she shall fly with us, with the ship?"

"Of course. We can go into the matter of our various specialties as we go along, but I can tell you, here and now, that we couldn't function without Hannah. She is our coordinator, interpreter, secretary, record keeper—oh, all sorts of things. A most useful person."

"You must be out of your mind." Kane dropped all pretense of being tactful, now. "A woman on a ship? Not only is that completely against all regulations as such, it is just not on as a practical possibility." He half turned, reset the navigator's chair as he had done with his own, sat in it and stared at Welby calculatingly. "I'll allow for your ignorance," he said, "and explain a point or two. In the first place a warship is no place for any civilians of any kind. There just is no room for unskilled passengers and no time for stupid questions, even in a fully complemented ship. In

a few hours my crew will be aboard, every man of them hand-picked, literally. A skeleton crew, of men with experience who know exactly what to do. And there will be plenty for them to do, I assure you." He swept the four guarded faces keenly. "If you were four men you'd still be a damned nuisance, and it would be my first duty to tell you that. I would then impress on you that you were under my orders, completely and without question, that I would have to be able to call on you to lend a hand, as and when necessary."

"We are not crewmen," Kopal declared, not aggressively, just stating it as a fact, and Kane nodded.

"You see? That's just the start. Dr. Kopal, if you fly on this ship you will do as I say, when I say it. That goes for all of you, in any case."

"But," Welby looked distressed now, "we are here to carry out tests and experiments on new equipment, not to make up crew numbers! Aren't you being rather obstructive?"

"Yes, I am, deliberately. This is a new ship, never been off the ground. There are a thousand and one things that can go wrong. I hope none of them will. I have a crew who will know what to do with most defects. I would hope never to have to call on any of you to lend a hand in a pinch, but I also need to know that I can, if necessary. That's bad enough."

"There is nothing to be afraid of, commander." Ninger had a smooth and silky voice, a needling grin. "We helped to build this ship, remember. We can assure you that it is well-found."

"You can't assure me of anything of the kind, and that attitude is just one of the other things I don't like." Kane edged his voice. "Most of all, I am not having her, a woman, on my ship, and that is flat." He swung to the navigator's board and buttoned the ship-to-ground communication link, watching the small screen warm into a glow.

"What are you doing?" Welby demanded.

"I'm getting through to Strategic Office, to Base Captain Alloway, the man who wished this lot on me." Welby moved

hurriedly, reached to cut out the call, and Kane glared at him. "That won't do any good, mister. If you're dead set on having your girl Friday along, you'll have to get yourself another commander and crew. Not me."

"This is ridiculous!" Welby grew pink. "You are prepared to sacrifice your rank and status for the sake of a stupid prejudice?"

"May I be allowed to say something?" Miss Kramer's tone would have stripped paint, had there been any handy. "If it will serve to make Commander Kane any easier in mind, may I point out that I am a scientist first, and a female only by accident of birth."

Kane swung his chair back again, slowly, weighing a thousand things at once in his mind. His immediate urge was to reject, but the situation was different from anything he had encountered before. It wasn't just his own whim here, but the future and fortunes of many other people. Maybe, even, of the whole war! He eyed Welby.

"Clear me on one point," he demanded. "Your innovations and gadgetry, those control desks up there—all that stuff is yours. Now, apart from that, is there anything fundamentally new or novel about the flight system, the basic structure of the ship?"

Welby frowned. "I'm not sure that I understand—?"

"What I need to know is this. I have officers and crew coming aboard. I have forty-eight hours to ready up, take off, and start tests. That is going to mean work and plenty of it. Now, is there anything we need to know, now?"

"Ah! I see what you mean. No, indeed. This ship is orthodox as regards flight systems. Except that there have been minor improvements in the drive mechanisms. Marius, that's your field."

"Nothing new," Ninger admitted. "The conversion-factors are better, the gauss-densities augmented a little. She will be lively, commander, but all strictly according to standard pattern."

"All right," Kane decided. "That's all I need to know, for now. Dr. Ninger, I am not 'afraid' of this ship, or of

you. If I was, I wouldn't be here. But only a fool fails to be adequately cautious with new and untried equipment. I suggest you try remembering that this is not a nice and neatly controlled experiment in a laboratory. This is a ship, with real flesh-and-blood people in it, people for whom I am responsible. Forty-eight hours from now we will be in space, where there are no back doors to run to. All right?"

Ninger lost his needling grin, but before he could retort Kane went briskly on. "You four scientists will have to look out for yourselves for a while. You'll be responsible, Dr. Welby. I suggest you use the space just forward of the battery room, in the power tube. That is usually kept free for emergencies and casualties. You'll make your own arrangements about food and sleep. You will provide yourselves with pressure suits. You will wear them, helmet down, at all times when we are in space. That is an order. You'd better see about drawing hammocks from ground stores. My men will be bringing their own as they come. You will get your personal gear aboard as quickly as you can. It is now"—he looked at the digital clock and compared it with his watch—"twelve thirty hours. By fourteen hundred hours tomorrow I intend to have this ship disconnected and free-standing, after which time no one leaves the ship under any circumstances. Is that all understood? Right—and you will keep right out of the way of my men and myself until after we have completed flight tests, maneuvers, and a jump. *Then* we will get to you."

He stood abruptly, braced his cap, and went to move away past them. Miss Kramer deliberately stood in his way. "Am I supposed to be grateful for your condescension, commander?" she snapped.

"I doubt if you'd know how, without practice." He stared her down, saw now why her complexion had that pearly sheen. She was wearing mesomorphic makeup, the current fad thing for so-called "cool" people. Now, betraying the heat of her anger, the pearl was modulating rapidly to a sultry carmine. It was considered daring to daub oneself with the stuff, a challenge of nerve and composure, a

declaration that one never lost one's cool. She was certainly losing hers now. The vivid scarlet transformed rapidly through the spectrum into a dark and iridescent blue, speeded by her own rage and mortification at losing control. It looked hideous, and tripped his tongue into anger.

"If you're so hell-bent on going along on this flight, Miss Kramer, you'll start by washing that stupid goo off your skin. And that's an order!"

"Oh!" she choked. "You! You and your orders!"

"Do it right away," he bore down grimly, "or I'll detail off some of my crewmen to do it for you. Scientist!"

He pushed past her and on out and down, and was just reentering the messroom when Petrie appeared from the other side, coming up.

"First contingent just coming aboard, sir," he saluted crisply, and Kane felt relief at the return to something like normal.

"Right, let's get organized. I want a quick check, top to bottom, for any outstanding defects or omissions, the obvious things like hatches, doors, lights, fittings of all kinds. I want everybody assembled here in an hour and I'll talk to them. Did you see anything of Mr. Harmer?"

"He's in the power tube now. Came in with me. I didn't know he was an engineer."

"One of the best." Kane saw the lights dim for a fraction of a second and flare up again, and grinned. "He's on the job now. Get going, mister. Dump your bag in your cabin and get busy."

"My cabin!" Petrie echoed, reverently. "Oh boy! A room of my own! Yes, sir!" He went away eagerly, and Kane made his way down the tunnel to the power deck, where Howard Harmer was already at the main switchboard, listening to the muted hum of a generator running up. He put up a thumb when he saw Kane.

"Very nice, Kenny. Sounds good, so far. Plenty of muscles, too."

"That's the way I heard it from the designers. Looks as if they did a fair job. Get yourself a good gang?"

"They won't be any trouble." Harmer reached into his pocket to bring out the spare documents. Kane stuffed them away, looked around the gleaming deck with a critical eye. It would look different, soon, once hands had been at work on it. Already he had the sense that the ship was less empty, more alive with movement and voices.

"You know what to do," he said. "Rough check to start with, and have your gang along to the messroom in an hour, so I can meet them, talk to everybody. Then we get down to it. We have four boffins aboard, Howie, people who helped design and build this thing, and they have big ideas about it. Like we won't find anything wrong with it."

Harmer grinned brilliantly, then rubbed his nose with a greasy finger. "Well, now," he murmured, "that's quite a claim. I never yet knew a dockyard to put anything together exactly right first time. We'll see what we can do, huh? Hey, Johnny, what'd you find?"

A lean and lanky technician came scrambling up, wiping his hands with a clutch of cotton. "Glands," he said succinctly. "Every last gland on the circulator line is weeping fluid, and they have the wrenches hid out someplace."

Kane grinned, sketched a salute to Harmer, and went away to nose into other departments and other problems. Quite irrationally, he wished Miss Kramer had been present—and Ninger, with his satirical superiority.

IV

THE GENERAL assembly in the messroom was the ultimate in awkwardness. Kane swung uneasily in a chair at what would be the officer's mess table in flight, and watched the men gathering below him in ones and twos. Instead of taking note as to what he was going to say, his mind wandered away back to the carefree days of theory, when it was assumed that ships of any size would naturally be constructed in orbital free-fall conditions. A nice logical idea, but by the time you added in the expense of blasting every

ounce of component into orbit, and then the dragging together, plus the exasperating difficulty of fitting and construction while hampered by spacesuits and in the nauseating state of free fall, it just didn't work economically. So this was the compromise, building on the surface; but on the surface of Luna, where the minimal gravity helped. Once only. This ship would never touch down again, except in the event of massive repair. So it was an awkwardness that every ship had to go through at least once, and that made it just a little easier to tolerate. But it was still damned awkward.

Petrie came scrambling up the handrail-cum-ladder to report.

"All present, sir. And the boffins."

There followed the time-honored and meaningless business of the men being called to attention, and Kane telling them to be at ease. And, just like that, the moment for a speech was on top of him.

"I'm no good at speechmaking," he began, abruptly, "so let me do some introductions. You've just heard Lieutenant Petrie, who is our navigator, communications officer, and Number One, the wailing wall. Alongside him is Lieutenant Alvarez, gunnery and deck. On my other side is Lieutenant Harmer, engineer, in charge of the drive, the power deck, all energy systems and auxiliaries. My name is Kane, and I'm your commanding officer. You all know who you are." It got a grin, rather to his surprise.

"Most of you have met each other. I recognize some of you by sight. I intend to get to know you all, personally, as soon as circumstances permit. For now you need to know something about me, and then about this ship and our program. About me"—he paused to select words—"I'm no great believer in ceremony, in making a show, in going through the motions. What I do believe in, strongly, is making things work properly and efficiently. I believe that a ship, plus its personnel, is a unit, a unit made up of many parts, and it will work properly—and happily—only if all the parts are working properly together. I'm just one of the parts, with a

job to do. Understand this. I can and will work with any man, alongside any man, but if I have to get behind a man and shove, I will lean on him—and he will know he has been leaned on.”

They were silent now, intent. He resumed evenly, “As you’ll have seen already, this is a brand-new ship, never been off the ground. We are only a skeleton crew. Our business, and our program, is to take it away, put it through the mill, try it out—and eventually deliver it to Capella Base, with a full report. That’s as much as I know. What happens after that—well, it will depend on what kind of report we turn in, and we needn’t bother about it until the time comes. We are concerned with the here and now. Every one of you is a picked man, picked because you know the way things ought to be in your own department. I am going to assume that you will all get on with it, without any driving. From what I’ve seen, on a brief examination, I believe we have a well-found ship; but there are bound to be all sorts of minor things that need fixing. I never yet knew a ship that didn’t have those. So it will be up to all of you to check and examine. Anything out of line you will fix, if you can, or pass on to your section head if you can’t.”

He stopped again, realized he was sweating underneath his clean paper coveralls. “So much is routine,” he went on, “but this is no routine ship. I know you will all have heard rumors. This is the time and place to settle those. This ship contains a number of innovations, improvements, and advanced gadgetry. Over to my left”—he gestured briefly—“you see four people. Nearest me is Dr. Welby, who is head of the team. The others are Dr. Ninger, Dr. Kopal and Dr. Kramer. Scientists, or—as they will have to get used to being called—boffins. They helped design some of the fancy gadgetry. When the time is right, they will explain to us how it works and what it’s supposed to do. I don’t know any more about that than you do, and it doesn’t concern me, or you, yet. Our first job is to make sure that this ship will fly right. I am given to understand that the high brass are expecting great things of this ship. I want it that,

so far as *our* part is concerned, they will get it. So take no notice of the strange bits, the bits you don't understand, unless any of them directly interfere in any way with normal operations. In that case you report it, fast! I think that's about everything. Any questions?"

"I have just one, sir." Howard Harmer's voice was gentle, but resonant to carry to everyone. "We've all been jumped into this thing a bit fast. Is there any chance we might get a few hours ground leave before we lift off? We have a few personal ends to tie off, maybe."

Kane nodded thoughtfully. "You all heard Mr. Harmer, I think? I'll agree this has all been a bit sudden, for me as much as you, and while none of us has any right to expect favors in wartime, there's no call to be savage for the sake of it. So"—he glanced at his wrist—"it is now just after thirteen thirty hours, and I'm keeping us from our meal break. I don't need to tell you there's plenty to be done. If I am satisfied that everybody is rolling up his sleeves and getting on with it, then, all right, there will be general ground leave from eighteen hundred hours. Make the most of it. Those of you who don't want or have no need to go all the way back to Copernicus will find that billets have been arranged here in Kepler for tonight. I don't know what there is in the way of diversion, but I have no doubt you'll find out. Mr. Petrie, you'll attend to that. Names, lists, and so on." Petrie nodded unhappily.

"Just one word of warning." Kane turned back to the crewmen. "Make the most of the break, but don't be thick with it. I want everybody back on board by seven thirty hours tomorrow—and fit. Not hung over. What with stores and supplies, clearances, fuelling and trim, we have a full day's work ahead of us, and I intend to have the ship disconnected and free-standing by fourteen hundred hours tomorrow. God help anybody who groks that up! That's all. Dismissed."

Petrie coughed discreetly. "Will you want a watch aboard tonight, sir?"

"That won't be necessary. I'll be staying aboard myself

in any case. You three"—Kane embraced his executive staff with a stern eye—"have a responsibility, here, to plan the chores for the afternoon. Don't waste any time, but don't overplan. I mean, let's not have it sprung on anyone at the last minute that he won't be able to catch the eighteen hundred deadline. And"—he fixed on Petrie—"I meant that, mister, about being hung over. In my experience it isn't always the crewmen who grok things up."

Petrie turned the jab aside by making a covert gesture to where Miss Kramer was disappearing after her colleagues down the tunnel to the emergency space Kane had allotted to them. "Is she included in the flight, sir?"

"That," Kane told him, "is a scientist primarily, and a woman by some accidental afterthought. Bear it in mind."

"You bet I will. I can't stand the intellectual ones."

"Can't stand the competition, you mean," Alvarez corrected. "I saw the way the dark demon was looking at her. That's Ninger, isn't it?"

"All right, get moving," Kane ordered. "I want a full assessment from you three of all the stuff we need that we haven't got, as quick as you can. Mr. Petrie, I want those lists and watch routines from you inside an hour. I'll be in main control."

He had been there some fifteen minutes, plowing through routine paperwork, when Dr. Welby, diffident but determined, approached him.

"I would like to thrash something out, commander, as soon as possible."

"All right, what?"

"I am distressed by the obvious animus you have against scientists. I'm sure it is some misunderstanding. I would like to try to put it right."

"You'd be wasting your time, mister. I have a great respect for science and scientists, and it gripes me when I see them step out of line. There's the animus you speak of. But don't let it bother you. I have a job to do and I intend to do it."

"Out of line?" Welby pinked again. "I don't understand!"

"All right." Kane sighed. "Put it this way. Science is logical. Rational. Scientists are, or should be, idealistic as well as pragmatic, in touch with reality and possibility at the same time. And so on. War, on the other hand, is stupid, irrational, an uncontrolled emotional abomination that achieves nothing good, that surrenders to every base instinct in humanity, that succeeds merely in ruining and destroying everything it touches. And this so-called war in particular is about the most stupid and nonsensical that humanity has ever floundered into. Yet here you are, a team, using up hours of time and energy, brain power and effort, risking your lives even, to promote it. For bigger and better weapons to hurl against an enemy you can't even identify!"

"And you are the commanding officer," Welby retorted.

Kane curled his lip. "I joined Space Navy, in twenty oh two, when it was adventure, when it was the cream service, when you had to be good just to be accepted, when eight out of ten failed to finish the training school. I never engaged to fight any war. By my reckoning I've been sold down the river by a bunch of primitives. By any statistical reckoning I should have been killed six or eight times already. Perhaps I have been. Once I had stars in my eyes. Not any more. I'm here, and I'm stuck with it. But you—you're a volunteer! You could be neutral. You could even be doing something to stop this insanity!"

"I see!" Welby had drawn a curtain over his face now. "I think I understand you, commander. Thank you for telling me." He was turning away when Petrie came into view waving papers. Kane called him back.

"Dr. Welby, something else for you to chew on. Mr. Petrie, here, will be along, just as soon as he can make the time, to instruct you and your team in basic ship drill."

"Is that absolutely necessary?"

"It is. It is my job, as far as possible, to see that all contingencies are provided for. You heard me remind my crew that they all know, are supposed to know, their duties. Those include the basic rules of self-preservation that can make the difference between life and death. They know

them so well they can do them in their sleep, and may actually have done that a time or two. I know I have." Welby started to interrupt but Kane talked right over him.

"Mr. Petrie will instruct you, and you will learn, not just to save your own lives but because you will be jeopardizing the lives of others if you don't. I don't want some indispensable crewman risking his skin because any one of you didn't know where the nearest emergency lighting switch was located, or how to seal up a helmet fast, or which way is up! You'll learn, all of you."

"No need to bear down on them, sir," Petrie protested mildly. "They can't help being civilians!"

"You were a civilian once, Mr. Petrie. You learned. See that they learn. All right, Dr. Welby?"

The elderly scientist nodded stiffly and went away. Kane took the lists from Petrie and glanced at them, was in time to call Petrie back from a hasty departure. "A minute, mister. I'm amending these. See you alter your copies likewise," and he drew a heavy cancellation through several "extra" duties. Petrie thought he would protest, took a good look at Kane's face, and thought again. "I am quite capable of keeping my own cabin square, mister, of slinging and stowing my own hammock, getting my own meal tray, drawing my own fresh paper, and all the rest of it. If I can do it, you can. I'm not having crew men double up as servants and nursemaids, not on this ship."

It was Petrie's turn to depart with offended stiffness, and Kane sat back, feeling irritated. Here was the first gentle nudge on his part to get out of stupid and time-wasting rigmarole, to establish a little rational common sense, to achieve efficiency—and already he was running into pig-headed resistance! Why were people so sold on rite and ritual?

He pushed the irritation away, went back to the tedium of paperwork. Reports started to come in from various sections. Minor teething troubles. The CO₂ scrubber section needed resetting. Someone had discarded a whole pile of insulex in one of the ammunition holds. Somebody else had

hooked up one array* of storage batteries back-to-front and that array was flat. There was a long but unimportant list of badly made joints and connections from the power deck, and a growing accumulation of stores needed to round out the essentials. Kane was still at it when the ship went quiet as the crew took advantage of one last night on solid ground. It was ten twenty-five by the digital clock as he pushed away the last of the papers, folded the unused names and profile cards into a large envelope, ready to return to the office tomorrow, and went slowly along to his cabin.

The ship felt full of ghosts. Solitary by nature, he didn't mind being alone; fully aware of the loneliness of the man in command, he didn't mind that either. Something deeper than that was bothering him. Methodically and without thinking about it, he slung his shock hammock, arranged his bedding and a light just so, stripped out of his soiled paper disposable coveralls, took a shower, and changed into a crisp clean set. The routine was as natural to him, or to any serving man, as breathing. You made sure of a clean comfortable sleep, and you also insured being fully dressed and ready, instantly, if and when the alarms sounded. The solution to his deeper uneasiness came, as so often before, as he opened his favorite bedside book, at random, and came on the passage, "For in and out, above, about, below / 'Tis nothing but a Magic shadow-show / Played in a box whose candle is the Sun / Round which we phantom figures come and go."

And there it was, he thought. Omar had his finger right on the point, this ridiculous insistence by people that they were important, that their personal opinions and desires made any difference to the general scheme of things. It was so much simpler, so glaringly obvious, that things and events moved, and that people either went along with them, being as rational as possible—or they got mangled in the wheels! Canute could sit there and order the sea to halt as hard as he might, but it took no notice. That was centuries ago, but people still hadn't caught on. Kane shook his head, seized the hammock stays—and stopped, wondering. He had the

sudden, totally irrational but quite positive feeling that he was not alone in the ship. It was just a feeling, but he knew himself well enough to realize he would have to do something about it, or it would nag him for the rest of the night. Sighing, he pulled on his boots again and went out and up to the main control, intending to work his way down. At least, he mused, he could switch off any unnecessary lighting on the rounds. But he got no further than the control room itself. There in the pool of light from one overhead lamp was Hannah Kramer, her glowing brown hair undone and obscuring her face as she peered down at some instrument or other. Kane made a deliberate noise and she looked up, not startled.

"Good evening. I knew there was someone still aboard, and I guessed it would be you. I hope I am not breaking some rule?"

"None that I know of." He went closer, staring down at her. "Your gadget told you there was someone aboard?"

"By inference, yes. It's a mass-effect converter. That means nothing to you, and why should it? It will mean very little to anyone, once it has been properly calibrated for the full crew and everything else aboard. From there, the computer will handle it."

"I may owe you something of an apology," Kane offered gruffly, "for anything I have said. Of course, you have *your* work to do."

"It doesn't matter," she closed the cover on her instrument, "except to indicate how you think of us. Different. Not human. Scientists. Or, as you pointed out, boffins!" She stood up and moved her shoulders to ease away a momentary stiffness in them.

"You've got me wrong," he objected. "I don't regard you as inhuman—" His words died as he saw that she was wearing something sheer, sleeveless, and white that stood between her and nakedness no more effectively than a puff of mist.

"I am quite human, as you can see." She challenged the

look that she thought she saw in his eyes. "Don't you agree?"

"I was about to say," the mild steel note came back into his voice by itself, "that you and your colleagues are civilians—passengers—unless and until you learn to fit into the whole. There is no room in a warship for parts that don't fit. That's like trying to swim in lead boots. You being a woman exaggerates that factor by several orders of magnitude. You see, my crew are male, and just as human as you are!"

She had backed off under the lash of his tone, her ample breasts in visible agitation, her blue-gray eyes wide. "I'm sorry. I hadn't thought of it like that at all. I wanted to be here, to do something positive, effective, because my only brother was in that first research expedition beyond Capella, the one that never came back. Can you understand that?"

"I've lost friends, colleagues, good men. Of course I understand the emotional reaction. But from people like you I expect something more intelligent, something to stop this futile squandering of lives and material—not a fanatic insistence on bigger and more destructive weapons. I take it the advanced gadgetry *is* to augment our killing potential?"

"But you *must* hate the enemy!" Her astonishment was plain now. "You *must*! What kind of man are you?"

"A rational one, I hope. Come here." He took her arm, not gently, and steered her to the middle of the rear bulkhead, slapping a switch that peeled back the transpex cover plate over what would be the "front" of the ship, in flight. The terminator had passed Kepler an hour earlier, and it was true night now, utterly black and sparkling with star-jewels.

V

"Look!" HE commanded, extending his arm to point upwards. "Above, and to the right. The Crab. Taurus. Aldebaran. And Mirfak. And—there—is the place itself, Capella.

Forty-six light-years away. Take a good look. Do you have any idea just how many systems we found—planetary systems suitable for human colonization, that is—before we got that far? In excess of forty! You just think about that for a while. We humans started spewing out into space twenty-odd years ago, around nineteen ninety-two. We went crazy in all directions, planting domes, colonies, settlements—all over the show. Then, just five years ago, we blundered into the far side of Capella and got stopped. So we screamed bloody murder, girded up our primitive loins, and went to war! War? With an enemy we know nothing about—not where they come from, what they look like, anything—except that they busted us in the snoot once. And we couldn't stand that. Miss Kramer, I'm sorry about your brother—and all the other fine men who have been killed out there. But you should ask yourself, sometime, what the hell were they doing there in the first place?"

She freed her arm, stood away from him. "I should ask you, too, with that kind of outlook, what are you doing in command of a warship?"

"Good old black and white! I'm not with you, *ergo* I'm against you. So I'm a traitor, huh? Who do I sell out to, tell me?"

"I didn't say that!"

"I don't think you know what you are saying. I told your chief I was in this business long before there was any war, and I'm stuck with it. I have a job to do and I'm going to do it thoroughly. But that doesn't give me an excuse to switch off my brains and think with my hormone system. You've made noises about being first a scientist, then a woman. You have the sequence all wrong. First and all the time, you're a fool, just like the rest."

"Everyone else is out of step but you, commander?"

"Not quite," he said. "One doesn't get the chance, these days, to get out of step. Our culture is too well organized for that. Whether we're on the road to Heaven or Hell, we all go together."

"You're really against this war, aren't you?"

"When, Miss Kramer, did a war ever settle anything? War smashes, it destroys, and it stops things. But it doesn't solve anything, never has."

She moved past him suddenly, flicked a finger to her instrument panel to switch it off, then turned to face him. "Philosophy has no better record, so far as I know. And we don't have much alternative. At any time, commander, the enemy may decide to carry the war to us. Will you then try explaining to *them* how futile it all is?" She swept past him again, halted briefly before departing, just to say, quietly, "Good night, commander."

She left him shivering and uneasy. Without knowing it, she had put her finger on the one fear he could never completely clear from the back of his mind. The mere thought of those inscrutable globe-ships erupting out of a quiet sky, accompanied by the nauseating "sense of evil" they brought in their train like some weird radiation, was enough to tilt his stomach. Back to his hammock once more, he stared at his worn copy of Omar and shook his head. For this problem, the old tentmaker had no wise words at all.

Despite an uneasy sleep, Kane obeyed his built-in timer and was out and alert by the time the crew came trooping aboard. There was plenty to do, enough to keep him too busy to dwell on ghost-fears. And there were minor nags, none important, but cumulative. Petrie and Alvarez resented having to wait on themselves, and showed it in small mannerisms. The rest of the crew were surly, ready to find fault with anything and everything. Some of it, Kane knew, was pretest nerves. Test flying a spaceship is hazardous at any time, and this ship was something new anyway. But there was more to it than that. What would have been the routine labor of taking aboard stores and fuel in Eratosthenes, which was equipped for it, was a dragging, irritating business here in Kepler, with everything coming over the crater wall by tractor, and the wrong kinds of derricks and layout. Halfway through the "morning," Candy came with a grievance after his report that all the torpedoes and corroder-cans were stowed.

"It's the guns, sir," he said, meaning the launchers. "They don't look right. There's a new thing, a kind of box, stuck on either side of the trainer—"

"I've seen that, on all of them. Do they get in your way?"

"Did while we were hauling in the ammunition."

Kane gathered breath for a blast, then held it back, made himself be patient. "Well, you won't be bothered with that again, not for a while. We may be able to have something done about it by then. Meanwhile, I suggest you take your boys through all the drills for loading and aiming, get familiar with any new feel. Don't interfere in any way with those additions, though. I have Dr. Welby's assurance that none of the new gadgets interfere with normal operations, so don't mess about with them until we've been told what's what."

As Candy went away, Kane took time to ponder on the affair, adding it to another complaint, from Howard Harmer, this time, that he had just dealt with a few minutes earlier. "There's a whole mess of new wiring, junction modules, what look like boosters, and all sorts of muck, around the jet vents. If we get anything like a system failure on any of those, it could take all day to sort out." Kane had given him the same panacea. Ignore it. Proceed as normal. Let's get the ship flying first. That was the position he had started from, and it looked now like being a mistake, but he was stuck with it. Switching attitudes in mid-stream would be a hell of a way to start his very first command. He damned the scientists heartily; then, as he pondered more on the general air of unease—which he could feel himself—he added a special curse for Miss Kramer, convinced in his own mind that her female presence was responsible for almost everything.

Details came up, were dealt with, fell into place. Deadlines were met. The personnel hatch was sealed and ground assist abandoned, the access tube withdrawn. Countdown shrank into minutes. Final checks came in and were marked off. Now, in the last few crucial minutes, Kane felt an easing of his tension. Gathered in the control room with Petrie and Alvarez on either side of him, the four passengers clustered

at their own subpanels, everybody suited up and helmets at the ready, he felt more confident. This was the part he knew best; the only difference being, in this case, that there was no senior officer to tell him when to do what. That was one part of the military system that he thoroughly detested and was glad to be able to discard. In Navy days, by God, the man in control *was* in control, with the ship's nerves under his actual hands, not sitting back issuing orders! A quiet voice spoke in his ear.

"Main drive and auxiliaries running up, sir, on ground systems. Ten seconds to full power."

"Check." Kane acknowledged, moved a switch. "All hands; stations for lift-off. Report." The green winkers came within seconds, all complete. He had the sense, now, of being at the heart of a complex web. Petrie reported,

"Ground systems standing by to kick out."

Kane reported to the power deck. "Get rid of ground power when ready, Mr. Harmer." Right on his words came Harmer's report.

"Disconnected, sir. We have it all on our own."

"Clear from flight platform," Petrie murmured. "We have a twenty-five minutes window. Troop-transport just gone over."

"Right." Kane spoke on the G.A. again. "All hands, lift-off in ten seconds. Mark!" The die was cast with one simple movement of his finger that set the whole train of events in motion. At precisely the right moment hypox jets spouted, burst into incandescence, and belched forth. Temperature registers rose and jiggled. The fabric of *Aspire I* shivered, and the ringwall of Kepler sank down, slowly at first then with increasing speed. Kane kept his eye on the jet-throat temperatures, watching them climb. At two thousand five hundred he cut in the booster coils, felt the immediate liveliness of the ship's response, heard Alvarez grunt. The gunnery officer, with nothing to do but con over the performance, showed a slight frown. Kane grinned tautly.

"Learn something, mister? I know those throat liners will stand up to three thousand, but not much more. I like a

bit of tolerance. You ever had to help change throat liners?"

"Lots of times, sure. It's a regular chore."

"Never in peacetime, and we got just as far, just as fast. Pushing everything to the limit is a wartime attitude. Give me a plot, Mr. Petrie. Straight up out of the ecliptic, give us room to maneuver."

Petrie nodded, activated his sensors, and the plot screen in front of Kane glowed into a square grid. Watching it, sensing the ship's efforts and estimating them, Kane kept up his explanation to Alvarez in a quiet monotone. "Plasma injection, a specially designed fuel, a gauss-boost that pinches the flame away from the tube walls as well as giving augmented thrust—that's what made space flight practical, Mr. Alvarez. How to get a practical and efficient mass-velocity ratio without frying everything in sight. But they don't teach history in space school any more. No. Three thousand they will stand, so whip 'em up there and keep 'em there. And renew throat liners every five hundred hours of flight. Docktime!" Alvarez scowled in protest.

"You're wasting power that way, though."

"I am? We make our own power, mister, with fuel. And what the hell do you think we are spouting out of our tail, marbles? You've a lot to learn. Hah!" He suspended the lecture as a bright green spot grew on his grid, off-center at ten o'clock. "First correction?"

"It'll take one more," Petrie agreed. "About the same veer."

Kane took a breath, flipped the switch that activated the quarter-phase field, adjusted it gently, and to everyone in the ship, thrust now became "down" and everyone felt a lot happier at once. This was "normal." Kane eyed the plot point again and grasped his levers, easing them gently against the minimum free-play, then he set himself to juggle the ship until that plot point stood precisely in the center of his grid. His concentration was total, but not so one-pointed that he failed to notice a stammer at one particular angle. He overshot a fraction, corrected, and there came that stammer again.

"Second correction," he announced, and the point flipped

away almost to where it had been before. This time, deliberately, he leaned on that particular correction angle, and the stammer was no longer just a hint, but a good and savage juddering, making the spot dance on his screen. He eased off and achieved the point delicately, held it, steadied the drive at one gee, then switched to the power deck link. "Mr. Harmer?"

"I got it, sir. A bad one, somewhere in the left forward cluster. Just a misfire, I hope. Check you back in a moment." After no more than ten seconds, Harmer was talking again. "Left forward cluster, sir. Three out of the four jets are stone cold, haven't fired at all. It has to be either a faulty joint or a blown breaker. I'll have to open up to find out, and this stuff is nonstandard. It could take a while."

Kane said, "Hold it," and looked across to his scientists. "Here's your chance to justify your existence, Dr. Ninger."

"Certainly." The power-systems expert rose and moved away. Kane reported to Harmer. "Expert assistance on the way down, mister." He flipped a switch. "All stations, we have a minor defect on the power deck which will take a while to fix. A chance for everybody to check around. Use it." He killed the connection, looked across to the strangers again. "A question, Dr. Welby. I see the computer has augmented memory-store, almost as much as they used to have in Navy days. Do you anticipate using *all* of it?"

"I hope not. We built in a large tolerance factor."

"Fine. Then you won't object if I commandeer one module. I'll explain. Our immediate purpose, once we have everything functioning right, is to put the ship through the mill, to execute all the maneuvers likely to happen in an engagement with the enemy. That's the standard exercise, and it sounds fine; but my colleagues will assure you, even if you don't believe me when I tell you, that in the actual event, it is anything but fine. It is more like a madman's nightmare. It is Mr. Petrie's job to locate, identify, and point at the enemy; Mr. Alvarez's task to coordinate our weapons; and mine to so move the ship as to help them both to the utmost without exposing it to damage. To do it properly we would

need six arms each and lightning-fast reflexes. As we do not have those, the actual event resembles three drunken men trying to fence with each other on roller skates. Do I exaggerate, gentlemen?"

"It can get pretty hectic," Petrie admitted. "What with G-forces dragging you every which way, and the snakes can shift!"

"So, I propose to revive a practice that was common in Navy ships, when we had computers, real ones, not the stripped-down black-boxes they fit in standard ships. Like this," and he explained, tersely, just how he would run each maneuver in slow time and feed the details into the memory-store under a general command. Once that was done the computer would take over all the fine details of "Attack" or "Evade." His two lieutenants had immediate objections.

"What do we do then?" Petrie demanded. "Just sit and watch?"

"No, mister. We will then be free to override, to seize opportunities, to use strategy, instead of being so damn busy pushing and pulling that we haven't time to think of anything else. And there's another thing." Kane went down into a pocket in his suit and produced a set of paper discs of various sizes, which he handed to Petrie. "The snake ships always appear as combinations of globes, I don't need to remind you. Use those to teach the computer what a snake ship looks like, so it will recognize immediately. Faster than you can. I'll show you how. And then, Mr. Alvarez, you can use the same system for the weaponry." Alvarez looked mulish. Across the control room, Dr. Kopal coughed.

"Commander, do I understand you properly? This idea has not been used before in combat?"

"I was going to ask that, too," Alvarez muttered. "Look, I've done the regulation computer course: pattern breakdown, coding, analog stimulation, data entering and retrieval, all that. How come we never did anything like this in school? Or on a ship?"

"I don't know. I tried to suggest it, once, and got my ears chewed off by my commanding officer. His idea was that men

fight, machines just do as they are told. Maybe I was suggesting that a machine could do something that he couldn't, and he didn't like it." Kane watched Petrie plotting in the many variations of silhouette offered by the discs, then passed them across to the gunner. Alvarez shook his head unhappily.

"When I've done this," he said, "the machine will tell me there is a snake ship about, will point my weapons at it—and what do I do then, make noises of encouragement?"

"You'll be here," Kane told him, "to perform your proper function, which is to take over in case the unexpected happens." At that moment Harmer came through from the power deck to report ready for action once more, and in another moment here came Ninger, rubbing his hands clean and smiling. Ten minutes later Kane was able to justify his claim. He had put the ship through a slow by-numbers evasion of an on-coming enemy and into a tight turn to come up from the rear and engage, using a fictitious target supplied by Petrie.

"Now," he declared, "we'll do that again, but this time the machine will fly us. Please note. We're engaged. Snake coming in, front, left twenty-five, high fifteen. I am swinging out to evade, then around to engage from the stern. At speed, and I'm as heavy as lead, and so are you. But we all have to move like greased lightning, don't we? Fun, isn't it? Not any more. Million-eyed Mike, there, doesn't have to fight G-forces. The only other thing we have to teach him is not to be so fast that he smears us across the bulkheads." He threw the switch and warned the rest of the ship what was going to happen, then, to Petrie, "Throw me that simulated attack once more, mister."

The next few minutes were hectic as the ship leaped into speed, cut away from the "enemy," then screamed into a turn and did everything except open fire, all of it a lot faster and more accurately than any human control could have performed it. Kane drew a deep and happy breath, started the pattern of a different maneuver, and glanced across at Kopal.

"Answer your question, Dr. Kopal? I don't know why this hasn't been done before, except perhaps the military mind at work prefers to think in terms of manpower and sweat. We'll try a different target this time, Mr. Petrie."

The game went on for two hours, until Kane was satisfied that the ship could handle any of the more obvious forms of attack, and all the standard maneuvers of approach and evasion. By that time he was feeling the strain himself, and the savants were experiencing their first taste of space-sickness. He ordered a half-hour stand-down, noticing that Miss Kramer was looking worn, and Welby was showing his age. Ninger, on the other hand, looked pleased.

"The ship performs very well," he declared. Kane nodded.

"Fine, so far. Very lively. Just as soon as we've had time to check everything out, we'll try a jump. It's my intention to head for Scott Base, which is about one third of the way to Capella; it should take us about four jumps. If we make that without further incident, then we'll be clear to try out anything new you may have in store for us."

Ninger shrugged. "Nothing new from me. The drive is fine, so far. If the jump system is equally good, I'm clear. The rest is up to the others."

"Has the jump system been livened up, too?"

"I think so. If it goes as I hope, it should take only two jumps to Scott Base, not four. But we shall see. I am learning caution from you, Mr. Kane, and it is easy to be wrong when dealing with zero rest-mass and Pauli forces. We shall see."

They saw. After advising the crew, Kane ran the ship up to minimum jump speed, trod on the pedal that threw in the Pauli field that put every atom of the ship into forbidden states and orbits, winced at the inside-out feeling that went with the timeless leap from here to somewhere else. And then they were arrived, in real space again, with everything purring and ticking over as it should be. Petrie got instantly busy and within minutes was able to say,

"That was *some* jump, sir. One more like that and we'll be able to spit on Scott Base!" Kane nodded, raised a thumb

to Ninger approvingly, set the controls for one more jump. A good ship. He felt a glow of pleasure as he trod the pedal again, held on—and then stiffened as the control room echoed to the strident blare of alarms and klaxons and the ship spun and lurched, picked up speed. Enemy—here?

VI

"SNAKES!" PETRIE screamed, over the passionless howling of the alarms. "Three in formation, right ahead of us. Right forty-two, up fifteen, and coming!" All in one movement Kane cancelled the alarms and gave the computer the go-ahead to attack. Already he could feel the internal horror, the shrill nausea that came like some kind of foul radiation every time the snake ships appeared. No matter how many times he felt it, he felt the same twisted sickness just as strongly. A machine might need pattern-recognition drill and shapes to identify those deadly things, but no human ever did. Now, as the program took over, enormous weight screwed him down into his chair, down and aside as the ship veered to plunge headlong at the first of the enemy.

The star-field spun on the screen and then steadied, the drive eased off a little, the ship fell, slid, lurched again, just as it had been taught. The enemy grew from a pinprick to a cluster of points, to silhouettes, to three discernible shapes, to one ahead of the others, coming closer rapidly. Kane stared at it, fascinated all over again at the alien thing. Five billiard-ball smooth globes somehow held together and flew as a unit, with no visible means of propulsion, nor any signs of weapons or observation ports. A truncated string of beads, swelling rapidly, as the *Aspire* hurled herself at the projected point of intersection on a collision course. Time stretched thin and held as he stared and wondered what they were doing here. *This* side of Capella. Had it come, at last? Were the enemy striking back into human-held territory?

Then Kane, with an effort, overcame his fascination, swept a glance around his control room. The savants, like him, were struck immobile and staring. Except Kopal, who was hunched over his panel, probably in terror. Kane levered his head around to Alvarez, intending to warn him that they would soon be within range, but only to see the gunner straining over his panel, fingers crooked and ready to push the Attack buttons. He did so now, sweat beading his face, and croaked into the intercom, "Fire! Fire! All turrets, fire!"

On the giant screen the five globes began to shimmer from their dull green into actinic blue, spouting needle-points of dazzling light. Kane saw his hull sensors report a rapid increase in temperature. He echoed Alvarez.

"Fire, damn you—what the hell—!"

There came a desperate croak from the speaker. "Corroders—to control—can't move—the bloody traverse gear—jammed!"

On the heels of that came a similar cry. "Torps here. Control can't swing—gear jammed!"

Alvarez swore, slammed a switch, and shouted, "Revert, revert! Go over to manual! Revert to manual!"

Kane choked back a groan. To swing, and traverse, and aim, a corroder-thrower or a torpedo launcher, even under static conditions, was a muscle-aching labor. Now, under three-gee drag, they'd never do it in time! The hull temperatures were climbing rapidly into the danger zone. The enemy ship was monstrous in the screen now. He made his fingers do the only thing possible in the circumstances, and cut off the drive completely, surging forward in his chair as all the weight fell away instantly. In the next second he saw vortex rings puff out and disperse from the leading globe. He knew what that meant and ducked in his seat, unable to do anything about it. The snake had launched its own version of corroder-cans, curious dart-shaped projectiles that released a fast-acting stuff savage enough to eat holes, in anything it touched almost at once. Nothing like as efficient as the corroders his crew were desperately trying to fire now, but deadly enough in their own way.

BEYOND CAPELLA

He felt a rapid double-thump, and again, the four red telltales went out on his board, to tell him that the corroder's crew had shot their bolt for at least the three minutes that it would take them to reload. That was three minutes longer than healthy. He reversed the cut-off swiftly, the drive came on again, and there was an instant, reeling, sideways thrust as the computer went into an urgent and evasive flight path. Kane had barely braced himself against that lurch, when there came a titanic *ka-bam* in the opposite direction, an impact that shook the whole ship and bounced him violently against his harness. The lights flickered low, crazily, sank into a horrifying red glow, then flared up again. He needed no instruments to tell him they'd been hit, but the sweat came out on his face as he saw where.

By his board, and the weapons read-out, the whole of the front of "B" tube was dead. The torpedo bay gone! He watched in dread fascination as a sequence of lights showed him the airtight bulkheads clicking into place to isolate that section. Alvarez turned to him, gray faced, and he snarled.

"No time to weep, mister, there's more coming."

The ship heeled, cut drive and spun a forty-five degrees angle, blasted away at a new attitude, as the computer selected, impersonally, the next enemy in line for attack and stormed towards it. Kane levered his head in a keen sweep of the control room. Miss Kramer looked sick but alert, Ninger seemed stunned, old Welby had his eyes shut, but was upright, Kopal was out cold and sagging, held only by his harness. Once again a pinpoint grew on the screen and became a discernible outline. Kane ordered his leaden arms to reach for the camera controls, swinging the astern ones until he had what he wanted. There, dwindling fast, but still identifiable, was their recent foe, and even as he stared at it he saw the iridescent globes suddenly change color, go dark and dull, and then erupt in a burst of swirling fragments.

"Ya-hoo!" Petrie crowed crazily. "Spang on the button!"

Kane moved a switch. "My compliments to the corroder

crew. A hit. Let's see you do that again, please. We've lost our torpedoes." He put the switch back, and Alvarez growled deep in his throat.

"Why the hell would the traverse gear freeze up?" he demanded. The ship jumped, slid, settled into another intercept course. Kane frowned.

"We'll find out," he promised. "Meanwhile, that's our strategy. Cut drive as soon as ever we're in range."

The second ship swelled rapidly on the screen, growing up out of the lower-left quadrant. Kane remembered his responsibilities.

"Mr. Petrie," he said. "Forget about him. You keep a sharp lookout for the remaining one. Let's not get caught in a box."

There was no need to say more, because they all knew this particular tack of the enemy. Those ships could only fire their corroder-darts on a broadside, so it was policy to go for them headlong, to offer the minimum target. But the heat-beams were something else, could be deployed at long range, and were magnified, somehow, if a target could be lined up between two ships beaming at the same time. Kane felt his faculties freezing up as he tried to evaluate a dozen things at the same time. If only it hadn't been the torpedoes! Corrodors were fine, were deadly if they made contact. Once exploded they smothered the enemy in a soup of eat-anything acid, boosted by hyperactive catalysts—but they were, at best, only short-range, and they had to hit. Torpedoes, on the other hand, were self-powered, instrumented to seek out their target, fused to explode in proximity, and were total-conversion units against which nothing could stand.

Kane watched the enemy grow huge, saw the color-change and the way the skin temperatures started to soar again. He knew a second fear, that the torpedo magazine, right behind the ruined turret, was now vulnerable to those heat-beams. He dared not get in too close. He braced his finger over the cut-out, watching the gunner's board. At the same instant that the weapons-board put up

the "In Range" signal, he cut the drive, and Alvarez hit the Fire switch. In the next breath Kane felt that double-thump again, and again, and knew a small glow of pride at the performance. He had fought a corroder-turret himself, more than once, and could appreciate the driving urgency and efficiency behind that slick performance. Then, as he buttoned for Evade he heard Petrie shout,

"Here he comes, right on top of us. We're going to run smack into him!"

It was the truth. As the star-field swooped and steadied, there was the third enemy ship, fully broadside across the screen, heat-beams glowing and puffs of vapor declaring a savage attack with full armament. Once again time seemed to hold still and Kane felt his wits congeal as he struggled to devise a way out of the crunch. The computer was useless now. Either it would plunge in to the attack, not knowing that *Aspire* had no more teeth to bite with, or it would hurl itself into a vain evade pattern—vain because no matter which way the ship veered at this range, it would still be broadside on, an open target. Then, from some hitherto unsuspected recess in his mind, Kane found a tactic, seized it, acted on it instantly. In rapid sequence he killed the drive, rapped the attitude controls to spin the whole ship end-for-end, checked it there—and they were storming up on the enemy now, but stern-first and blind. Screwing the hypox-flow throttles right down to minimum, he hit the drive again, leaving the gauss-pinch where it was, at full squeeze. The braking thrust was small, just enough to strain him back against his seat.

Petrie was yelling like a man out of his mind and fumbling with the screen controls to get a view astern, but he was much too late. *Aspire* was on top of the snake ship by now. In his mind's eye Kane was seeing the main drive vents, seeing the thin thread of plasma-hot hypox being squeezed and ejected in the gauss-pinch like ravening needles of fire. On the main screen they got just a brief flash of the second enemy falling away into the star-night, resolving into a clump of overgrown vapor-balls of swirling

decay. Then all the screens were full of debris, of crackling lights, whirling chunks, lancing lightning bolts, careening spheres exploding apart, dwindling away in all directions, as the ship staggered and jarred, and then grew steady. Falling away into the distance, then springing apart into dazzling incandescence. Then nothing.

Kane sucked in a shaky breath, adjusted the controls with an unsteady hand to bring the ship to relative rest, to one-gee steadiness. He was shaking all over, and it took him two attempts to settle his voice to the point where he could instruct Petrie to perform a total scan, to make sure there was nothing else within danger range. His voice sounded unnaturally loud. So did Petrie's as he obeyed and then relayed,

"Not a thing, sir, apart from a few pockets of residual radiation. A few fragments. Great Ganymede! We got all three of the beggars!"

"Yes." Kane felt empty. "Mr. Alvarez, check the torpedo bay state, please. Let me have a situ report soon's you get there."

Alvarez went away hurriedly, flipping his helmet into distension and buckling it down as he went. In a moment the power deck connection came on and Harmer's easy voice asked,

"Power deck here. Mr. Alvarez just went through. Do I take it the panic is over, sir?"

"Yes, Howie, sorry, I should have said. Attention all hands. Hear this. The enemy group has been eliminated, all three ships. The immediate emergency is over. That is *not* an excuse to goof off. Stations report, you first, Mr. Harmer."

"Yes, sir. We got a few splinters from the hit on B tube, sheared a pile-coolant line, nothing serious. Damage isolated and under control. We are also losing coolant pressure, but that will be something busted in the torpedo bay most likely. Technician John Fell badly burned, getting him comfortable right now but he needs attention urgently."

"Noted, thank you. A tube?"

"Candy here, sir. Negative damage, all is GO. A few bumps and scrapes but nothing to worry about."

"Thank you, Mr. Candy. And congratulations on a first-class job. It will be recorded. Mr. Alvarez is checking conditions in B tube. You will be informed." He broke the circuit, turned to Petrie. "Better get us located fast, mister, we're going to have to run for it."

"Checking now." Petrie scowled over his board. Kane lifted his head, saw that Kopal was still sagging in his harness and signalled to Welby.

"Better take a look at your colleague there, he seems to have passed out in the excitement."

Both Welby and Miss Kramer seemed to come alive with a shudder, and went to aid their companion, but Ninger looked as if he had something else on his mind. He stared at Kane so pointedly that it seemed worthy of remark.

"Something bothering you, Dr. Ninger?"

"Yes, commander. What you did, just now. That last maneuver. I don't quite understand—"

"Leave it." Kane cut him off as the midget radio in his suit helmet sizzled into speech and he raised it close to his face. "Mr. Alvarez?"

"It's bad, sir. You'd better come and see for yourself. One man may still be alive but unconscious. No doubt about the other two. The whole bay is a write-off, falling apart."

"I'll be right there. Take over, Mr. Petrie." Kane moved, angry at the way his legs wobbled under him, popping his helmet into rigidity ready to clamp down, taking the spartunnel in one swooping leap that got him to the power deck. There was a sick stink, here, of coolant fluid, with two men mopping up, one attending the panels, and Harmer on his knees by the fourth man to finish cocooning him into an emergency straitjacket.

"He won't get any worse for an hour or two, Kenny, but he sure as hell won't get any better with what we can do for him."

Kane nodded, and his suit radio crackled again. It was Petrie.

"We can make Scott Base in just over eight hours at three-gee, or longer at less. Or a minijump will get us real close, if we're lucky."

"Check," said Kane, thinking hard. Time counted now. One man was dangerously injured, possibly another. "Ready up for jump," he instructed. "Get Dr. Ninger to cooperate on the settings, since he's the expert. You tell him, from me, that either we hit Scott Base on the nose, or there'll be more dead men. Right?"

"Check. Right away!" Petrie responded. Harmer, close enough to overhear, put up a thumb to acknowledge, then turned to one of the mopping men. "Karl, gimme a hand to sling this jacket in Johnny's billet. We're going to jump soon." Kane went on, down the spar-tunnel to a heavy bulk-head door, clamped his helmet in place, went on through the airlock and into the ruined torpedo bay. He had seen similar wreckage before, had come alive out of it more than once, so this was nothing new, except that it was now *his* responsibility. The metal under his feet and all around was gray and gritty, slowly decomposing. Where the outer hull had burst under impact the metal was bent outwards, and all the scatter of debris was angled in that direction, testifying to the outrush of air into vacuum.

Alvarez was on the far side of the space, laboring to shut a valve. The compartment was foggy with vapor, and Kane saw now that it was erupting from a fractured pipe and dispersing rapidly. He picked his way through a nightmare of tortured panels and drunken pedestals, of snarled cables and ruptured sensor boxes. Alvarez, completing his task, turned and pointed a gloved hand to a far corner. Kane saw two men who had been in the direct line of the corrosive-dart impact, and there was no need to look at them a second time, but the crumpled suit in the corner might just hold life. This would be the man on the hoist-and-swivel reloading gear. He lay now like a cast-off doll, red smears obscuring the inside of his helmet and his attitude making it certain that he had broken bones, at least. Kane reached, took hold, hoisted, and the gunnery officer

came to help. Between them they got the awkward mass along, through the airlock and up the tunnel as far as the power deck, where Kane put his helmet back and sighed.

"I doubt if there's much hope, Howie," he said, "but take a look at him anyway. I'm going back up to control. We should be jumping soon."

He got there just as Petrie had finished setting up the pattern. "Ready to go, sir," he said, vacating the chair, "whenever you say."

Kane took the microphone. "Stations for jump. Ten seconds." He saw that Kopal was out of his chair and stretched out on the deck, with Welby and Miss Kramer attending. "Leave him!" he snapped. "Take your places!" The ten seconds passed, there came that awesome, timeless moment of twisting into impossibility and out again, and then Petrie, scanning his board, let out a cry.

"A good one, a good one! There she lies, right over there!" and Kane saw the small sun of Scott Base flaming distinctly in the lower right corner of the screen.

"Never mind the plot, mister," he said, "I can take us in by eyeball from here. Raise them on radio, and tell 'em who we are, that we have two badly injured men needing urgent hospitalization—better make that three"—with a glance at Kopal's inert form—"and that we are damaged, need repair and overhaul facilities. E.T.A. inside the hour." He concentrated on his controls, juggling with the energies under his command until the base was square in his screen and rapidly coming near. Then something about Petrie's silence caught at his attention. The navigator-communicator was frowning at his board.

"Can't raise them, sir. Not a pip on all the standard bands!"

Kane stared at him, saw the same surmise there that was in his own mind. They were close enough to the small star now to be able to pick out the pinpricks that were its planetary system, close enough to hear even the faintest transmission, had there been any. "Try a sweep over the suit-radio band," he instructed. "Microwave."

Petrie applied himself without comment. Kane held course with only half his attention. Snake ships this far inside the human sector was bad enough, but if that squad of globe-ships had clobbered Scott Base on the way—the implications of that were too disastrous to pursue until he knew for sure. All at once Petrie stiffened, hunched over his controls. "Got something. Faint. Better now. Putting on general—"

Kane heard the fizz and burble, and a voice.

"This is Scott Base, Tech-sergeant Hall. What ship?"

"*Aspire I*, ex-Luna, en route Capella. Lieutenant Petrie, communications. What the hell's wrong with your sensor, sergeant?"

"This is suit radio, best I can do. We have just been smashed by a flight of snakes!"

VII

"TELL HIM," said Kane, through his teeth, "that we have just wiped out the snakes, that'll cheer him a bit. Then find out the state, extent of the damage, anything we can do to help."

He could see the planet now, a spot that grew rapidly into a green and gold ball. He had been in and out of this base a time or two, and needed no help from his navigator, but he did need all his concentration. Somehow he managed it while keeping an ear cocked to the rapid interchange between Petrie and the sending technician. It was a simple, yet dreadful account. Less than five hours earlier, without any kind of warning at all, three snake ships had twisted out of nowhere into visible range of the base, and had made an instant and savage attack on the platform complex.

"They got our base monitor on their first pass," Hall stated, his flat anger saw-edged over the static. "Blew the A and B tubes all to hell, and knocked out the pile. So there went all our weapons and power right off. Been working on batteries ever since. *Canada* was in dock, had ar-

rived only an hour earlier with a load of casualties from the front line, was picking up fuel, stores and medical stuff. She got in there as the snakes came back for a second pass, but she never had a prayer with only a ferry crew. Then ground base got on the ball with hard missiles, and the snakes went away fast. You say you got all three of them?"

"Blew them all to hell!" Petrie assured him. "We were lucky. What's your condition, right now?"

"Not all that bad. Ground-side is O.K. No damage. The hospital platform was shook a bit, but still functional. The repair dock is O.K. and going all out to patch up and restore power. Radio comes a long way back in the priorities. You'd better go straight alongside the dock. They have transport for your casualties. All the hospital shuttles are out collecting debris and searching for survivors."

Now Kane could see the platform complex in the main screen, and some of the damage, as he cautiously flattened orbit and braked delicately to overtake and go alongside. The base was of a standard design, and there were six more like it, all scattered over a volume of space that could be safely assumed to be on "our" side of Capella. Because of that assumption the armament was token only, an assumption that would have to be changed now, he thought, and fast. Central to the whole platform complex was the monitor ship, riding a few yards above the spiderwork of the platform itself, a giant craft with one hundred times the power of a cruiser like *Aspire*, but with similar armament. Below and to one side, linked by fragile-looking girders and power cables, was the spreading hospital sector, a honeycomb of sealed and pressurized compartments and facilities. Balancing it on the other side was the repair dock, a network of nesting bays and mobile machinery. At the best of times it looked a disordered mess. Now it was visibly in the throes of upheaval. The monitor hung drunkenly at a wild tilt, with gaping, ragged-edged holes in her several tubes, and all around danced a swarm of fire-spitting shuttles, like so many pest-flies about a carcass, only these were repair units laboring to patch up the wounds. On the far

side, the hospital complex lay canted at an opposing angle but seemingly intact. Right ahead of him now, as Kane applied braking thrust, a flaring white marker light blinked on and off by one of the dockyard bays, pointing him in.

It was a delicate moment, and the control room fell into hush as he caressed the controls by feel, his attention wholly on his hull sensors. And then it was done, with nothing more than a single scraping jar—and then the echoing thumps of magnetic grapples falling into place. He sat still for one long breath, threw all switches to zero-off, then took the microphone.

"Finished with engines. All hands secure. Mr. Candy, one of your men to lend a hand get the casualties from the power deck to the main airlock."

And that was it. Secure. Stand-down. Time for everyone to take a breather. Everyone except himself. He looked to Welby.

"What's the verdict on Dr. Kopal?"

"So far as we can discover, he has a broken rib, possibly two, and Heaven knows what else. Almost certainly concussion."

Petrie left his seat, went to a wall cabinet to get a straitjacket and spread it on the deck. Welby moved to help him. Ninger came to stand on unsteady feet in front of Kane.

"About that maneuver," he began, but Kane waved him away.

"There'll be time later for whatever's on your mind, Dr. Ninger. For now you'd better lend a hand to get Kopal down to the airlock. It can be very tricky in free fall, and I do not want anything else to happen to him, yet."

Miss Kramer's head came up, her eyes sharp as needles.

"There is something wrong?" she demanded icily. Kane nodded.

"You bet there is. Things go click in my mind, Miss Kramer. They add up peculiarly. Things—like Dr. Kopal, on my list, is described as a specialist in computer-prediction systems. Like his operating panel was activated, is still in

the switched-on position right now. Like I took a good look at the wreckage of that torpedo bay, and the launchers, and I have seen the fancy box of tricks on each launcher. Nonstandard. Something new. One of my men made a complaint about them. Like the weapons were frozen, couldn't be operated, at a time when we badly needed them. What it adds up to is that Dr. Kopal and I have things to discuss, just as soon as he is well enough to talk. So I don't want anything else to happen to him until then."

Ninger, who had taken a grip on one carrying strap, turned now with a look of scorn. "You are going to hold Bernard responsible for what happened?"

"I'm certainly going to try, unless he can convince me differently. I intend to hold him responsible for the damage, the loss of B torpedo bay, the lives of at least two men, possibly four, plus the fact that we were temporarily defenseless in the face of the enemy. I dare say the Service will dream up some fancy name for it, but I'm calling it murder!"

Miss Kramer went to leap to her feet, ruined the impression by skidding into a helpless sprawl, managed to spit out, "You fool! You arrogant, stiff-necked—" and then she had to stop, being busy fending herself away from the bulkhead in one corner.

"See him down to the airlock, Mr. Petrie, then join me in the corroder-turret. Pass the word I would like Mr. Alvarez and Mr. Harmer to join me there, but don't leak it to the men just yet."

The group went awkwardly out and away, leaving him to stare bleakly at Miss Kramer, now uneasily on her feet and icily furious.

"Dr. Kopal," she declared, "is one of the world's foremost authorities on prediction systems."

"In a laboratory, maybe. On a ship, not!" Kane eyed her, choosing his words with care. "In either case, Miss Kramer, I don't believe it. I don't believe he is the foremost anything. I don't think any of you are."

The coldly flat statement killed her fury like a dash of

cold water into a boiling pot. "What *do* you mean?" she shrilled. "Have you gone out of your twisted mind?"

"I don't think so. Twisted mind? I've been doing some hard thinking, Miss Kramer. I'm pretty good at it, too, although it's not my place to say so. I've come to the not-very-difficult conclusion that none of you is the far-out expert he's supposed to be. And that this ship, no matter what I've been told, is *not* the ultimate, the last desperate throw of humanity against the enemy, nor anything remotely like it. In fact, Miss Kramer, I have come to the conclusion that this whole affair is just a small, wildcat experiment by a bunch of half-baked dissentients. Crackpots, if you prefer the term. Eccentrics, hell bent on proving a point or two. And that myself and the rest of my crew are to be the patsy-proof of your way-out theories. Whether I'm right or wrong, there are two men dead, two more in dangerous condition, and a smashed-up torpedo bay to account for, and I reckon your Dr. Kopal is the man who is going to do the accounting."

For a moment he thought she was going to snap back at him, and so did she, then sour determination settled on her face, lifted her chin. "Very well, commander. Obviously there is nothing to be gained by arguing with you. Let me pass, please!"

He watched her to the door, then called, "Don't forget to strip off your suit and reverse it, let it dry out. It will stink, otherwise."

She showed no sign of having heard him, and he didn't much care. He shed his own suit, reversed it, draped it over the back of his chair, and went away down the spar-tunnel to the corroder-bay. Harmer was just ahead of him. Petrie and Alvarez were already there. They started to brace up.

"Easy, gentlemen," he cautioned them, "this is off the record. We all heard the report from the torpedo bay that the controls were frozen, and we heard Candy make a similar report. We've all fought a turret like this, in our time. You, Howie, have worked on the gear from a repair point of view. So, we know what we are talking about."

"This damned gadgetry!" Alvarez tapped the unfamiliar box on the side of the launcher. "What else?"

"That is Dr. Kopal's responsibility," Kane pointed out, "and I'd better put you in the picture about that, just to be clear. Welby is the man in charge of the team, and I asked him, flat, if there was anything added that would interfere in any way with the normal running of the ship. He told me that apart from Ninger's trimmings on the drive and thrust, nothing. Everything else was normal. My concern—do I have to justify it?—was to get the ship in full fly order first, and then to go on to the extras. I said so. I told the old man to pass it along, that his scientists were to stay out of my hair, to keep out of the way, until we had completed trials. Does anyone want to argue about that?"

"Sounds reasonable to me," Harmer murmured. "I think we would've made it, too, if it hadn't been for the snakes. Nobody could expect to run into them here!"

"And that's the other angle," Kane pointed out. "That could write a whole new set of rules. We were conducting fly-trials, not battle stations. All the same, I think I have a point, that I was assured that everything was normal, so far as standard operations were concerned. And, from here, it looks as if it was this gadget of Kopal's that gummed up the works. So let's find out, right now."

"We can't open it up," Harmer warned. "We'd be wide open to a charge of tampering with evidence."

"Right. But we can run through the drill. Mr. Alvarez, you're the layer. Go ahead!"

Alvarez checked the controls routinely, in slow time, moved the lock handle from "secure" to "power-traverse," and seized the two levers, right for elevation, left for swing. Kane recalled, from years ago, the old gun-school mnemonic: "Your right hand says yes—nod your head up and down—your left hand says no—shake your head from side to side—and don't you ever forget it!"

Now Alvarez put his eye to the scope. Through that, if the ship was oriented properly, he would see the enemy ship against a graticule with crossed hairs and stepped-off

spaces. There was no other aid. Practice alone taught a man how to estimate from the rate and direction of the star-field and the apparent size of the enemy just how far to lay off to land a hit. Alvarez swore, jerked at the levers, drew back to recheck the power-on switches, then tried again, and gave up.

"Solid as a rock!" he growled. "You try it."

They all tried it in turn, and in vain. Then Alvarez reverted to manual control, cancelling power, folding the levers away and using instead a pair of hand wheels. The launcher now moved slowly but easily, in good order. He patiently reinstated power, and the gear seized up solidly.

"That seems to be as far as we can go," Kane sighed. "We have established that the traverse gear is useless as is. The rest is up to Dr. Kopal. Right now he is a casualty, and it will be up to the medicos when we can get him to talk. Until that, this is strictly between us. For now we have plenty to do. Mr. Petrie, check out what there is available in the way of recreation, and set up a liberty rota. You and Mr. Alvarez take first trick, Mr. Harmer and I will relieve you. Repairs should be under way by then. Anything I've forgotten?"

"There's one thing, sir," Petrie said. "About running into snakes this far back. Earth should be informed. And the base commandant will want a full report."

"He can wait!" Kane felt scratchily irritable. "He can't do anything until their Dirac transmission is patched up. Plenty of time to talk to him then." They drifted away back to the messroom, where the crew was gathered in twos and threes. Kane suppressed his irritation, muttered to Petrie:

"Get me a carton of coffee, will you, mister, while I talk to them." He established himself on the raised level of the officers' table and had their attention at once. "I'm sure you're all as shocked as I am to realize that the snakes have penetrated this far back of the lines. It's bad, but it need not be disastrous. Let's not go imagining that the whole Capella front line has been scrubbed. In my opinion this

was nothing more than a raiding party, pushing their luck. They pushed it a bit too far when they ran into us."

That got a murmur, out of which a voice arose with a faintly French nuance. "Is it the truth, sir, that we destroyed all of them?"

Kane picked out the speaker, stared at him. "You're power deck, I think. Mr. Calmet?"

"That's right, sir."

"Well. Yes, it's true. We destroyed all three. We had luck, some good, some bad. We lost B tube, and three men: O'Connell, Aznyk, and Greco; two dead and one injured badly, no way of telling who is who, yet. But we did get all three of the snakes, and most of the credit for that must go to Tech. Sergeant Candy and his gang. On the other hand, some of the credit must go to this ship and the way we handled her. We're in for repair, but as soon as that is done and we've ironed out a snag or two, I think we'll be more than a match for anything we're liable to run into." He let that hang a moment, shuffling ideas in his mind. "It was my original plan to spend a while in this area with more tests and trials. I'm changing that. When we leave here we'll be jumping for Capella and doing what tests we can on the way. I'm sure you all realize, now, that this isn't going to be the milk run we thought, so make the most of whatever liberty there is here. Mr. Petrie will be posting the rota soon—"

"Got 'em already, sir. Your coffee's getting cold."

"All right. Carry on!"

Kane drew himself down into a chair and sucked at his lukewarm coffee while Petrie read out names. He couldn't remember when he'd felt so utterly drained and weary. Thoughts of a shower, clean paper, and his hammock lured him. He slept like a dead man as soon as ever he was horizontal and safe in the foam-soft grip of his bed.

The steady, persistent bee-buzzing of his intercom roused him to an awareness of distant bangings and vibrations. He was out and on his feet by sheer force of habit before his eyes were properly open, grabbing the instrument.

"Kane here, what?"

"You've had your eight hours, sir." It was Alvarez, sounding dead beat. "See you in control in ten minutes? I've called Mr. Harmer. Repairs are in progress. There's a report on the casualties, also a steady string of calls from Commodore Airey. He wants to talk to you real bad. We have a visio-link working. I think that's about all."

"All right," Kane yawned mightily. "I'll be there."

Alvarez looked as careworn as he had sounded. "Been keeping myself awake tracing the wiring back from those damned boxes. They run to Kopal's panel all right. They are also linked into the computer."

"Anything else? Tell me only what I can't read for myself."

"Nothing." Alvarez knuckled his eyes. "It's all noted. The outside link is on that board over there."

"Right. You're relieved. Go get some sleep."

Alvarez shambled away and Kane settled down to read the reports. Aznyk and Greco dead on arrival, O'Connell died of injuries; Fell with second-degree burns and shock, estimated incapacity at least ten days. Kane scowled at that. Four men short out of a bare minimum crew, and there could be more snakes ahead. He scribbled a brief memo and went on to study the damage and repair estimates. Hull plates, innertralloid shielding, wiring, pipelines and seals, estimated seventy-two hours. Power deck, minor defects, sealings, pipeline, estimated twelve hours. He moved a switch.

"Control to power deck. Howie?"

"Hi, Kenny. Good as new here in a few hours."

"That's the word I have, too. Howie, could you run your shop with just two men, if you had to? By the report, Fell isn't going to make it anyway, and I'm three men short for a torpedo crew. I may be able to get replacements here, but I can't count on it. You know the form. Veterans and C-threes. So we may have to spread the load a bit."

"That'd be rough, Kenny. If it was just straight running, that's one thing, but with jumps, and snakes—I don't know. A man's got to sleep sometime!"

"I know. It's rough, but if I have to steal one of your men, which would it be?"

"That's easy. Karl Emborg. He was a gunner once, transferred to power. You wouldn't have to train him. Good man, Kenny, damn it!"

"I know. I'm sorry, can't be helped. Don't tell him yet, this is still provisional." There were other things he would have said but had to leave them as a stuttering green light on the outside link warned him of possible trouble. He moved to the link screen, pushed the accept button and saw a face grow on the screen. He had seen Commodore Airey before a time or two and was familiar with the weather-beaten ruddy face adorned with white moustache and goatee, but this was the first time he had ever had to deal with him personally.

VIII

"*Aspire I*, Commander Kane here. Commodore Airey?"

"Been trying to raise you for hours, man. This report of yours. Needs amplifying. More details. Background!"

Kane frowned. He had struggled over that report with his eyes drooping, but he was satisfied he had left out nothing important. "I can't see there is a lot more to tell, sir. We were lucky enough to destroy three enemy units. By time and place it seems they were the same ships that clobbered this base. That's about it, isn't it?"

Airey's eyebrows wagged furiously. "That's not it. Same ships, yes. Caught us with our pants down. That won't happen again, I promise you. But, man—three to one? With your torpedoes shot away? Just corrodors?"

Kane stiffened. He knew Airey's difficulty. Corrodors were regarded as secondary weapons, useful only for close-in work, preferably against an enemy already crippled. "We didn't elect to get in close, sir. It just happened in that way. We're a brand-new ship, sir. We were at trial stations, coming out of a jump, and we landed smack-dab in the middle of them."

"Hmml!" Airey pulled his brows down to scowl out from under them. "New ship. Skeleton crew. And yet you smeared three snakes. With corrodors! Wants some believing!"

"I'm finding it a bit hard to believe myself, sir." Kane hesitated a moment then shrugged. "It wasn't all corrodors. The third and last was a bit different." He arranged words, recreated the moment, and explained as briefly as possible just how the final enemy had been wiped out. Airey's face was a study in breathless attention and wonder.

"Damned if I ever heard anything like that," he admitted, when Kane was through. "Where'd you learn that tactic?"

"I didn't," Kane admitted. "Frankly, I don't know where it came from, sir. I didn't consciously think it through at all. It just seemed the right, the only thing to do, in the circumstances."

Airey grumped, shook his head. "That's one for the book. You'll be logging it. Mind if I make a note of it, too? Need all the tricks we can get." He looked away from the camera a moment. "You're requisitioning four replacements, I see. Can't help you there. I'm on rock-bottom myself, especially now. If you were anything but a new ship I might squeeze you some out of the walking casualties, but they wouldn't do you at all. Sorry. About this Dr. Kopal, now. A civilian, eh?"

"We're a new ship," Kane repeated stolidly. "We have a few technical people aboard, advising on some refinements. How is he?"

"According to this he has broken ribs, contusions, is badly shaken up, but should be fit to return aboard anytime, may actually be on his way at this moment. So much for that. Anything else we can do for you, Kane? Like to see you in my quarters sometime, if you can get away. Like to hear a bit more about that stern-blast stunt, eh?"

"That's very kind of you, sir; I'll try. There is one other thing. We're jumping to Capella as soon as possible, so I'd like my crew to have the maximum amount of break here,

while they can. Is the surface recreation space still available?"

"I've suspended it while we're still collecting debris, but I'll order it open again. Never use the damned place myself, you know. It's very pretty down there, but I'm a bit too old to enjoy fighting the pull of full-gee just for the sake of fresh air and sunshine. I'll give your crowd top priority. And Kane—"

"Yes, sir?"

"Your first command, isn't it?"

"Yes, sir."

"Thought so. It's all right to study the welfare of your men. Good thing. But don't neglect yourself. Delegate. Rest whenever you can. Take the surface break yourself, too. I know"—Airey's ruddy face broke into a grin—"there's a thousand and one things to do. You want to handle them all, be everywhere, take command. It's a mistake, my boy. No good having your men fighting fit if you're out on your feet, is it? In the crunch, they are going to depend on you."

"I'll be all right," Kane grumbled, but Airey shook his head.

"Think it over, son. You have men's lives, and a ship. You can't afford to run down. Nothing selfish in it. It's your duty."

Kane sat a long while after the commodore's bluff face had faded. Logic told him the old man was right, but his own inner compulsion wanted to be at everything, pushing, driving, checking up. Irritably, he went on down through the paper work, reaching the liberty rotas last of all. Petrie had done them the easy way, putting the three remaining gunners into one watch, and the power deck crew into the other. Tactfully, he had left the executive branch open, and Kane was still frowning at that when the man himself came yawning into the control room, scratching with one hand and steering a pair of coffee bulbs with the other.

"How much sleep have you had?" Kane demanded.

"All I need, sir." Petrie settled, eyed the master clock. "It'll be second-liberty trick in an hour. Unless there's some-

thing urgent for me, sir, I wondered if I might be free to sample the fleshpots of Scott Base Medical Sector?" He made a face. "No matter how you dress it up, it doesn't sound exactly hilarious, does it?"

Kane grinned despite himself. "I think I can do a little better than that for you, mister. I've just been talking to the commodore, and he is giving us priority on the shuttle-to-ground service."

"To ground? You mean, down to the planet surface?"

"Right. Never been myself, but I understand there's a few square miles of parkland inside a powered fence, a pool, a diner, a bar, and a pleasant warm climate."

"Wow!" Petrie put down his coffee unwisely fast and the spout emitted three wobbly brown blobs, which he hastily gathered by mouth. "That's for me—if it's all right, sir?"

"You'll be in charge of the party. Go see Mr. Harmer, find out how many of his party want to go. Him, too, of course. Then check on shuttle times, and the gunners. Understand, nobody goes anywhere until the first watch gets back, and that goes for everybody. Bear down hard on that. One fool fouls it up for everybody. I will accept no excuses for missing the shuttle on the return flight, get me?"

"I'll tell 'em. What about you, sir? You'll catch the next one, you and Jaime, when we get back?"

"I'll think about it."

Petrie went away in a fast glide that brought him into near-collision with Miss Kramer in the doorway. She came in cautiously, making handholds of anything solid, steered her way to a seat.

"This is terrible," she sighed. "It doesn't wear off. One expects the falling feeling to go away, and it doesn't."

"Helps if you have something else to think about. What can I do for you, if anything?"

"Information, mostly. Can you tell me how long we expect to be like this, in orbital free fall?"

"No longer than I can help. The repair deadline was seventy-two hours, and that was four hours ago. If I possibly can, I hope to clip that a little. Good enough for you?"

"Oh!" She didn't look pleased. "Of course, you're in a hurry to get on your way. I should have realized that."

"I don't like free fall any more than you do, Miss Kramer. No one does. Over there"—he thumbed in the direction of the hospital—"they have a centrifuge as therapy for all platform personnel. Prolonged free fall is no good for anyone. You sound as if you had some reason to linger."

"It's Bernard. Dr. Kopal. He is back aboard now. He professes to be quite well, but the base medical officer advised us that it would be a help to him to be in free fall a day or two longer. They wanted to keep him, but he insisted on coming back, to be here, to explain—"

"Yes." Kane thought it over carefully. All his instincts told him that this affair was best kept within the ambience of the ship, for the moment. There was no doubt whatever in his own mind of Kopal's guilt—of his responsibility anyway—but he was entitled to his chance to explain, to offer some kind of defense. There was no point in opening the door to the corrosive wind of a military court-martial until all the facts were in. "Very well, Miss Kramer," he said. "I won't try to clip it. You shall have the full span. The deadline is sixty-eight hours from now. Please convey to Dr. Kopal my wishes for his full recovery."

"I don't understand you."

"Don't try. It's a waste of your time. Better by far to understand the pattern of circumstances, rather than the inscrutable depths of the psyche. The pattern of events is all that matters. Those torpedomen may or may not have understood just why a warhead explodes at a certain signal, but they *did* know how to operate the launchers. But the launchers didn't work, and those three men died. No thanks to Dr. Kopal that you and I are here, alive, to talk about it. Facts, Miss Kramer. All the understanding in the world about Daniel O'Connell, Simon Aznyk, or Peter Greco—or me, or Dr. Kopal, or yourself even—can alter those facts now. The best I can do is to see that the same thing does not happen again. Do you question that?"

"So," she curled a lip, "you're a ritualist!"

"And you," he retorted coldly, "are a supernaturalist, a devotee of that school of psychotherapy that maintains there are mysteries in the human mind beyond the reach of visible study, that the human mind is beyond human understanding, and all the rest of that nonsense. I've heard both sides, Miss Kramer, and all shades in between. I belong to no school. If you must pin a label on me, call me a realist. In posse if not in esse."

Something he had said slipped through her armor. She flushed red. "You think you're very clever, commander—"

"Nothing could be further from the truth," he snapped, suddenly irritable. "Stop trying to understand me, Miss Kramer. Circumstances rule here. Circumstances which impelled you to speak to me against your will." She came up out of the chair, impelling herself towards the door. "Circumstances," he threw after her, "which make it possible for me to tell you that there is a shuttle service down to the planet for those who wish to go. The prospect is of eight hours of fresh air and sunshine. Lieutenant Petrie is organizing the trip at this moment. Please convey the information to your colleagues. They might be glad of the chance. And you yourself, of course."

She caught the door upright to halt herself, thoroughly confused. "I think you meant that kindly, commander. I still don't understand you—but thank you for the thought."

Kane watched on his screens as the ground shuttle went away down. The dark sky was still thronged with restless little ships, scooters, powered repair-floats, haulers and the now dwindling swarm of hospital search craft on their ways back from grisly journeys. The overriding monitor ship was almost whole again, permitting internal repairwork to go ahead at full speed. They would put a whole lot more zip into their weapon-drills from now on, he thought, letting the ideas drift and swirl in his mind. "Caught with their pants down," Airey had called it. Earth could be caught just as easily. If the snakes put out a real squadron, say forty or fifty ships, they could wreak havoc on Earth, and get clean away.

There was a certain irony about it. The whole history of Man was a history of war. Kane let his mind drift down the long corridors of the history he was fond of reading in his spare moments. *Homo faber*. Man the toolmaker. But always the tools were weapons, too. The plowshares always came *after* the swords; and the hand-ax served equally well to split a skull or a nutshell. Wars, violence and bloodshed, and now the snakes striking back. Did they have a similar history? Was it possible for a sentient race to become dominant, to achieve a high technological level, *without* fighting? The intercom bleated, calling him out of a dismal reverie.

"Kane here, what?"

"How long since you ate, sir?" It was Alvarez. Kane looked at the clock, wondered where all the time had gone. He was empty. He went down to the messroom to share a table with the gunner and discuss with him the repair state and the problems of going on with reduced complement.

"We could get by with C-threes at a pinch," Alvarez hazarded. "Say one gunner and one aide, like in training. That would give us two watches in each bay, if we transfer Emberg from the tinshop and put two more C-threes down there with Harmer and his gang."

"We may have to do that," Kane admitted. "But I don't care for it. If we run into snakes again there isn't going to be any time to tell a man what to do next." Alvarez shrugged, munched a while.

"Maybe we could co-opt a few veterans. They'd know what to do, all right, but could they stand the strain?"

Kane forebore to point out that he himself was perilously close to veteran status. The discussion tailed off into other technical affairs. Things came up to be dealt with. Time melted away. Kane, in the middle of checking out stores lists, was astonished to see Alvarez appear resplendent in new paper dress-rig. The gunnery officer aimed a finger at the master clock.

"In half an hour, sir," he said, "the ground-side shuttle

will be back here. Then it's our turn. Nice time for you to catch a shower and get changed and ready."

"Me?"

"Come on, sir." Alvarez was firm. "You need a break just as much as anybody. The ship won't fly away."

Kane thought of a few hours with solid ground underfoot, a real sun, fresh air in his face, and was tempted. "But there's a stack of stuff here—"

"Bill can deal with that, won't do him any harm. You go and change." Kane rose, winced to a kink in his back. The outside-link alarm chattered and Alvarez reached for it promptly.

"Base stores to *Aspire*, four replacement pressure suits as ordered, want 'em now?"

"Right away. There'll be a man at the airlock to receive." He cut the connection, looked up. "Don't hang about, sir. You want to keep that shuttle waiting for you?"

Kane went and, prompt to time, passed himself along the connecting tube to the hospital reception bay. Petrie and Harmer had taken over with no more than a grin, a nod and a word or two. The returning power deck men looked visibly refreshed. The shuttle deck was well filled with a chattering crowd of nurses, patients, and a few repairmen. For all his withdrawn temperament Kane felt the lift of association, the almost festive air, as they boarded the small craft. His seat companion was a plump, rosy-cheeked nurse, making him wonder all over again at the primitive drive that made women volunteer to come this near to the war when there was no need. A man had to respond, or risk the obloquy of cowardice; but a woman? And there was Miss Kramer, also a woman, masquerading as a scientist. Then, with a grim smile, he remembered his own doctrine: Don't try to understand people!

"Your first time down?" the nurse asked, in a thick Scandinavian accent.

"Yes. I've been here before, but never down to the surface."

"I come, regular, every week. It is necessary just to keep alive. You look tired."

"Does it show all that much?" Kane didn't want to converse at all. He would have preferred silence.

"It shows, for those with eyes. You will take advice?"

"I'll listen."

"Good. You have seven hours and a half. Not to be wasted. The food is good, from real soil, real animals. But eat only a little at first. Then walk, swim, sit in the sun, get really hungry. And then eat good, enjoy it, just before coming back. That is the best way." She spoke with conviction and Kane regretted his earlier coolness.

"That's very practical, thank you. I'll remember it."

"Welcome!" she smiled, then hunched herself and gripped the handrail as the shuttle braked into landing attitude. They went down, with the ease of many repetitions, on to a flat of concrete against an abandoned wilderness of dilapidated ore-refining sheds. Jibbooms stood idle, chimneys were smokeless, and the whole complex had the look of a ghost town by comparison with the paint-fresh military block-houses and control tower. Kane stepped away to one side, leaving Alvarez to take charge of the detail long enough to warn them to "be back here on time, or else—!" He sensed the full drag of gravity, the rush of real air in his face, the heat of the sun. And smells. He strolled away slowly, using his eyes. The oreworks had been mothballed out of the way. All around was green grass and flowers, and beyond that the high fence that kept out the planet's wildlife. A pleasant scene, if one ignored the hardened bases for missiles, tucked away out on the periphery. He saw the distant glint of sun on water that was the pool, and headed that way, loosening his top buttons against the warmth of the sun. There were seats by the pool. He made for one, and felt a prick of annoyance as two advancing shadows warned him that he was being overtaken by company. He halted and looked back. It was Miss Kramer and Dr. Ninger, side by side, coming up on him.

"I apologize," Ninger said formally, "for intruding on you in this way, but there are things we simply must discuss."

"All right, if it's just talk you want," Kane looked to Miss Kramer. "You have things to discuss too?"

"Perhaps," she said. She had on a deceptively simple affair in pastel blue that made her look young and feminine. "Marius is accustomed to my presence in discussions. I tried to keep him away, honestly, but he insisted, so I had to come along. To help out."

"All right." Kane indicated a seat. "I've never needed anyone to explain me to anyone else. It will be a change. Go ahead, Dr. Ninger. What's on your mind?"

IX

"IT IS STILL that maneuver." Ninger settled himself, with the dark intense glare of a man wrestling with inner problems. "Let me describe it as I saw it. We were plunging headlong into the third enemy ship. There was no time or area for an evasive movement, this I understand well. You cancelled the thrust so that we were weightless, but still travelling in the same direction, plunging to disaster. You then turned the ship completely around, so that we were travelling backwards-first, but still towards the enemy. And then"—he made an arresting gesture—"you fired the drive again, but on minimum hypox-flow and maximum gauss-pinch. Am I right?"

"You have good eyes, Dr. Ninger, if you saw all that from where you were, in that panic. Yes, that's what I did."

"Some I saw, some I deduced afterwards. I am familiar with your controls. I want to ask you, where did you learn that operation? And, more so, I want to say this—that it should not have worked! This is the fact I am bumping my head against, that I must talk over."

"Look," Kane made himself be patient, "I can't help you much. I've never heard of that trick before. It's possible that somebody else has done it, but I never heard of it. For the

record, neither has Commodore Airey, with a lot more time and experience than me. So you'll have to accept it that it just came to me out of some kind of intuition, or a blind guess. In fact there was very little else I could do. We were finished anyway. As for it not working, I don't see that. I may not be as expert as you on the hypox drive, but I do know the basics of it. Why shouldn't it work?"

"This is where I come in," Miss Kramer interposed. "This is all so much Greek to me. I don't know how the drive works at all. I don't even know why the thrust is *down* when we are going *along*!" She pantomimed the directions, and Kane stared at her suspiciously.

"You ought to know that. My word on you is that you're Welby's assistant on energy-field physics, and that's all that is. The Woodrow effect. The field that turns inertial effect through a quarter-phase angle?"

"Oh!" She looked disconcerted for a moment. "Yes, of course. I'd forgotten that."

"If you ever knew," Kane thought, and said aloud, "All ships have it built in, to provide a positive up-and-down heading. You've seen the mess you can get in with free fall."

"Let me explain," Ninger broke in impatiently, "to Hannah, who knows nothing. That will help. You listen. Now, rockets work on the ejected mass principle, impulse-reaction, the only effective way, so far, to get movement in vacuum. The effect is a product of mass times velocity, and those are our limiting cases. The greater mass of fuel we eject, the quicker we run out of fuel. So we try for greater velocity of ejection, and we run into another barrier. The only effective way of obtaining velocity is by heat—expansion—burning fuel. But there are limits to the heat that our machinery can stand. So we are fenced in. This is where we were when the first pioneers went to the Moon, Hannah. We were stuck up against barriers. But then came the stroke of brilliance. We could not carry more fuel, obviously, because the more fuel we carry, the more energy we need to move it. A dwindling spiral. We could increase the velocity, which means the tem-

perature, but we would melt any known substance that we could use for jetliners. So what now? Commander?"

"I suppose it was a stroke of brilliance," Kane mused. "It seems so damned obvious now. Call your fuel-jet a plasma. Inject it with the right atoms and it becomes conductive. Pass that kind of plasma past a magnet and you can generate electricity. We do. We call it magnetohydrodynamics. Reverse that, push the current through your magnetic field *around* your plasma, and you do two things at once. You squeeze it, thus moving it away from the jet walls, and you give it a big boost in velocity. So you get an augmented velocity of ejection without frying your jet liners. More velocity without the increase in temperature. Which is exactly what you want."

"Exactly!" Ninger was emphatic. "We were able to multiply jet velocities almost a thousandfold. So simple."

"But what has all that to do with your problem, Marius?"

"Yes." Ninger rubbed his hands together. "Yes. Think. The gauss-field squeezes the hypox-flow, hurls it forth. But what if that flow is cut down to almost nothing, to a mere thread? It should pinch off altogether, and be bottled up in the jet throat, unable to pass. It should have accumulated in the firing chamber. We should have exploded!"

"Nuts!" Kane declared flatly. "You're fooling yourself with your own words, Ninger. That gauss-field exerts a pinch on the plasma, but it can't pinch it off. It can't. No plasma, no pinch. The gauss-field can't work on something that isn't there, can it?"

Ninger sat quite still as if paralyzed, for a whole minute. Then he rose, walked three steps away, came back, shook his head. "I am a fool. For many hours I have been strangling on that one crumb, in sight of something great. And it was only a crumb, a nothing. I thank you."

"Was it all that important?"

"Tremendously so. Listen. One needs a chamber in which to ignite and fire the hypox. Then a nozzle, or barrel. Then a megagauss-field, easy to do in a small space. And then, one has a weapon that will spit a needle of hypox, at two

thousand degrees or more, at a tremendous velocity, a weapon that will slice through things just as we sliced through the enemy, back there. I will work on it. You shall have credit, commander. Perhaps it will become the Kane firebeam, eh?"

"It won't!" Kane surged to his feet angrily. "You keep my name out of it. I can't stop you working on it, as much as ever you like, but leave me out of it. I have no wish to be famous as the inventor of a killing weapon."

Ninger shrugged. "It is of no moment just now. Wait until I have worked out the basic pattern. Then we shall see."

He went jerkily away along the poolside, heading for the diner, his arms out of step with the rest of him, obviously engrossed in his ideas. Kane looked down at Miss Kramer inquiringly. "Aren't you supposed to trot along and help him?" he demanded. "I thought you two were close?"

"You thought what?" She came to her feet, stood facing him. "Myself and Marius? How ridiculous! We are associates, and good friends, but nothing more than that."

"He doesn't think so."

"Indeed? And you were telling me not to try to understand people?"

"I'm sorry." Kane managed an apologetic smile. "That wasn't me. I was quoting somebody else, supposedly expert."

"It doesn't matter." Miss Kramer made a throwaway movement with her hand. "Commander Kane, now that Marius has said his piece and gone, there is a matter I would like to discuss with you. Do you mind?"

"Seems I can't get away from business no matter how I try."

"I'm sorry. I know this is a rest period for you, but on the ship you are almost inaccessible and preoccupied with immediate matters."

"Look," he shook his head patiently, "I was promising myself a swim, then a laze in the sun, maybe a bite to eat afterwards. Can't we both do that, and talk at the same time?"

She smiled with a faint suggestion of mockery. "You are

not very good at social graces, are you? You should have put that quite differently. No matter, your suggestion is a good one. Come on." He went along with her, realizing too late what she meant, that his tone had said for him: This is what I am going to do, take it or leave it! They came to a flare-lettered notice: AVOID GIVING OFFENSE. USE THE DISPOSABLE COSTUMES PROVIDED. And there was a dispenser with two arrows, one pointing to the male side, the other female.

"Quaint!" she said. "And ridiculous, in this day and age."

"But not here," he corrected, working the lever that got him a plastic-wrapped pair of minitrunks. "Frontier mentality—something you ought to study up a bit. In a familiar milieu, where you can pick your own society and companions, you can afford to ignore taboos, modify conventions as much as you like. But in a place like this, where all kinds of people from all kinds of backgrounds have to mix in without choice, there's a tendency to bear down on conventions as a kind of safety barrier."

"That is rather profound." She raised her brows. "But why should I study it?"

"Because it applies to you, right now. You're a scientist. You can consort with men like Welby and Kopal and Ninger on understood terms. All of a kind. But not here. The nurse who sat beside me was Scandinavian. The three men who were killed in that torpedo bay were Irish, Russian, and Greek—and the only thing holding them together was the threat to existence. In cases like that, and this, you have to have rigid conventions. On a ship especially. Women don't belong on a warship. I've already told you that."

He left her to go into the minimum cubicle and change into the paper swimsuit, noticing as he emerged the plain difference in color between one leg and the other, the "new" one shades paler than the left. But then, with a trot and spring, he was in the water and revelling in it, the coolness, the liquid caress, the easing buoyancy. Swimming and space-flight rarely came together, but they did have in common that blessed easement of weight. "Perhaps," he thought, as

he surfaced and blew, "it's because we were all aquatic animals once that we still have dreams of flying!" He looked back to see her come down to the edge of the water, and had it not been that there was no one else at all at this end of the pool, he would never have equated her with previous images. Stripped down to just the minisuit, with her hair in disarray, she looked small and frail, quite unfit to match alongside harsh metal and savage energies. She plunged in, not too skillfully, and came splashing out to where he was, near the raft.

"It's cold!" she puffed. "But glorious! What a relief from all that clumsy weight!"

"How long have you been on Lunar Base?" he demanded abruptly.

"Over a year. Oh, I could have gone back to Earth two or three times. I suppose I should have, but there was the ship, you see. That was too important to leave. And that's what I want to talk to you about."

"Not technicalities," he protested, and she laughed.

"Of course not. I couldn't, anyway, not without help." She clung to the raft edge while he scrambled out and gave her a hand to join him; then she spent a moment shaking the excess water from her hair. "You said it was all a lie, that Dr. Welby and the rest of us are not experts, that the ship is not something extra special. Why? Why do you disbelieve what you've been told, what you've seen with your own eyes?"

"It's what I haven't seen, among other things. Lots of other reasons. None of them very complimentary. Me, for instance. I am what I am. Ten years in the service and only a lieutenant, specially jumped two grades to take this post. Nothing spectacular. No special skills. No blue-eyed boy, me. So, if *Aspire I* is the supership it's supposed to be, the latest product of the high brass, why pick *me* to command it? That's just for a start."

"And the rest? Please go on."

"All right. Not only do they pick a nobody like me, they allow me to pick my own crew. And they order me direct

to Capella, doing trials en route. Now, what I said. Ten years in the service. I know the high-brass mentality. I've seen new ships commissioned. That is not the way it's done. One has a swarm of technicians under foot, while the crew just stands by and notes points. That, alone, can take a week. Then there are conferences. The place is stiff with admirals all justifying their existence. Politicians, too. And then there comes the formal send-off, the brass bands, the ceremony. You want more?"

"No." She was very quiet now. "That's enough. You're right in some ways, wrong in others, but shrewd. I suppose I have no business to tell you—it may upset something—but I feel you're entitled to an explanation of sorts. It's true that the ship is *not* the product of the U.N. War Commission. At all. The most we could get from them was their unwilling permission to build just one ship, in which we could put our own ideas into practice."

"Who's we?"

"Originally we were a large group within the War Research Authority. We were doing analyses of the patterns, especially of the enemy. You do realize that we know almost nothing at all about the enemy except what their ships look like? That there has never been any debris picked up, even? I wonder if you also realize that half the battle in using a computer is to ask it the right kind of questions. We felt that the War Board was asking us the wrong kind, that we needed something utterly new and different. Of course, nobody wanted to know. We became a hard core. We worked on ideas, hammered them out, persisted, lost a lot of friends. We endured ridicule, official disapproval, lost more friends. And that's about it. We ended up with one basic hull, the minimum construction staff, grudging expenses, no encouragement—but we built the ship. And we four agreed to fly with it. So, you see, we are the experts on that ship."

Kane met her attempted smile with a cold stare. "You had your theories. You were determined to prove them. But why pick on me and the rest?"

"We had to have an official crew. The War Board wouldn't

bend on that. We would have flown the ship ourselves, but they wouldn't have it. In any case, there weren't enough of us to do it. Please realize, we had to do all this in our own time, over and above routine work. We had to have a regular crew. So, as we were working with computers a lot anyway—and that was one more thing the War Board didn't care for; they still think that admirals and generals make the best decisions, you see—we just shuffled all the available names into the machine, specified the qualities we wanted—and we got a crew. But we couldn't get a captain at all. And our analysis proved that the captain was vital. We had everything else. It was Edgar—Dr. Welby—who suggested the way out. We were listing commanders, of course. He suggested we list lieutenant commanders. We drew a blank again, but now we knew, and we went further down, listed lieutenants—and the machine drew you. You matched specifications all down the line. Except in age."

"I was just about to call you on that," Kane muttered. "I'm too old for your pattern, surely?"

"Not if one remembers that age is largely subjective. The military mind needs hard rules. By them a man is too old at thirty. All men? You know that isn't so, but it makes a convenient rule. We ignored it. So now you know just what you've been let in for."

She met his gaze bravely, but he could see how vulnerable she was. And yet not. He tried to imagine her persisting, running her head again and again into the brick wall of official disapproval, fighting for the chance to prove out a theory. To make something work.

"I think I know," he said, "how you feel. I've had some. A lot. I know the official mind. I've had the rule book thrown at me quite a bit. I'm glad you told me the story."

"You mean—you understand?"

"You should have looked at my dossier before you ran it through the machine. Why d'you think I'm still a lieutenant, at my age?"

"Oh!" She caught her breath, her eyes wide in relief and delight. "I'm so glad!" Before he could object, her arms

were around his neck and her mouth warmly on his. He was shocked still by the contact of her body against his, the beat of her heart, the sudden chaos within himself. She drew away, a scarlet tide in her cheeks.

"That wasn't very wise." He had difficulty making the words, and the red glow faded from her face. She smiled crookedly.

"I suppose not. Bad for discipline."

"That's about it, yes."

"Very well. I understand. I'm sorry. I will undertake to forget all about it, if you will."

"Yes," he said unhappily. "I think that would be best."

"The sun is quite warm, isn't it? I think I'll go in again." She slid from the raft and swam slowly away. Kane followed, wondering why he felt suddenly so empty. Hungry, perhaps? In a while they made their way out, and to the diner. She was once again demure in the pastel blue dress and he warmly formal in dress-rig, and the chaotic incident on the raft was a thing of dreams only. They encountered Ninger at a table, too engrossed in figures to think of eating. They bullied him into taking food, ate themselves, went for a short walk to enjoy the air, and it was all still hollow. Kane was almost glad when it was time to board the shuttle once more, and relieved as he got back to his control room. It was like closing the door on something he didn't quite understand, and was therefore afraid of. Petrie was glad to see him and surrendered the chair of grief gladly.

"Roll on," he said, in wistful memory. "I could do with another issue of that. Did you get the grub, sir? I got my teeth into a real steak. They had it listed as a cut from some weird animal, but to me, it was a steak."

"It was very pleasant," Kane admitted gruffly. "I think you can let it be known, Mr. Petrie, that provided the work goes along as it should, there will be another eight-hour ground-side liberty for each watch in sixteen hours time. Now, how's the B tube coming along?"

With that it was back into familiar routine and petty detail, the humdrum behind which he could bury the memory

of other things. But there was also the inevitable confrontation with Dr. Kopal. Welby brought it to a head. Kane had retired to his cabin to have a moment in which to bring up to date his own private log. The old man found him there, and although apologetic, he was bluntly determined.

"It's the business about Bernard, commander," he said, without any preamble. "Naturally, we've had to tell him of your accusations, but we haven't gone into details. He considers himself fit enough to see you, to make his explanations, whenever you are ready."

X

KANE TOOK A moment to close up his book and put it away, using the pause to marshal his thoughts. "You realize, of course," he told Welby, "that this is not just a dispute between him and me?"

"I don't quite understand what you mean."

"I mean there will be witnesses. My officers. And my senior hand, Tech-sergeant Candy. And a recording of everything said."

Welby didn't like it. His plump face lost some of its easiness and assurance. "Will all that really be necessary?"

"It will." Kane kept calm. "I would be a fine fool to stick my neck out, just my unsubstantiated word against Dr. Kopal's, with you backing him."

"That isn't what I meant. Is it really necessary that this matter becomes official at all? Can't we keep it among ourselves, just at this stage?"

"That will depend on whether Kopal can convince me that he wasn't to blame. Convince us, that is. Do you believe he can?"

"I don't know what it takes to convince you, commander. All I can say is that I am quite satisfied. Will you set a time?"

"Yes. One hour from now, in the control room."

There was sour tension in the air as Kane took his place, settled into the resilient grip of his chair. "Mostly for your benefit, Sergeant Candy, I'll explain a bit. In the first place, not a word of what is said here is to be repeated outside, not until I give the permission, clear? Now, you will remember clearly, I'm sure, in that little fracas we just had, how your track-and-aim gear jammed up on you. I'd like you to tell us all, now, in your own words, just how it was. Go ahead!"

Candy, almost as old as Kane, and certainly as battle-scarred, took a moment to think. "We were closed up to stations, just standing by. Me on One, Nick Borosov on Two, and Bill Hogan between us on reload. Then the jump. And then the alarms cut loose. We heard Mr. Petrie sing out. We didn't see a thing on the scopes for a while, but then the first snake came in sight. I went to train left and up, after him, hollered to Nick—but I couldn't move the levers at all, sir. They wouldn't shift."

"Did you try to free them?" Alvarez demanded. Candy ducked his head.

"Yes, sir. That's routine. Disengage power, track by hand a little, reengage power. But they were still stuck hard. Then the Fire signal came up on the scopes. And that's when I hollered out to you, sir." He looked to Kane.

"Thank you, sergeant. That's all we need from you at the moment, but stay handy, we may call you again. Now, Dr. Kopal, there's a little more. As soon as possible after coming alongside, I made a personal check of the gear Mr. Candy was referring to. Lieutenants Petrie, Alvarez, and Harmer went with me. We are all familiar with that equipment. We all tried to operate it in the orthodox manner. We couldn't make it work. We were all able to operate it with power off. Disengaged. By hand, we call it. It is so designed that it will still be workable in the event of a power failure. But there wasn't one. Sergeant Candy, his crew—and the crew in the torpedo bay—were entitled to assume that they had full power assist. They did so. As a result, three men were killed, one was badly burned, and this ship damaged, partly

crippled, by enemy missiles. Now this next bit, I freely admit, is a matter of opinion. My opinion is that but for the failure of our weaponry we would have stood a good chance to get away unscathed, at least from that first encounter. Mr. Alvarez, would you care to comment on that?"

"On strategy, sir? Well, as I've seen it, the drill is to get only as close as is necessary to cut loose with torpedoes, and then to get the hell out of it. Because we had to wait for the system failure to register, to revert to hand, then to fire, we were a mile too close. And we bought it. What Candy did with the corrodors was something else again, was damn good—"

"I think we can save that, mister, thank you. The point is, Dr. Kopal, that our strategy would have been to fire as soon as we were within the range, and then evade. And we couldn't, because the weapon system was inoperative. Please understand, I am just laying a basis, here."

Kopal, clinging to his control panel, nodded bleakly.

"Very well," Kane resumed. "Now we come to you. From my list, you are described as an expert at computer-prediction systems. From observation the weaponry systems on this ship carry additional gadgetry, stuff we know nothing about. That gadgetry is traceable back to the control desk where you are now standing. It's yours. I therefore charge you with being directly responsible for the fact that our weapons were inoperative, with placing this ship in unnecessary jeopardy, and being directly responsible for damage and loss of life. That's my piece. Now it's your turn."

Kopal grunted, wriggling painfully against the discomfort of tight bandaging, and stared at Kane thoughtfully. "You make a difficulty for me, commander. I have to begin by saying, yes, it was my devices that were responsible. They operate from here." He slapped his desk.

"That's it, then, isn't it?" Kane demanded. "There's no more to be said. I'll note that and then it's out of my—"

"But that is *not* it! There is *much* more to say. Please allow me, commander. You have had your moment. Allow me mine. Questions. Was it not you yourself who said, 'We

will first test the flying of the ship, and *then* we will do with the gadgets? So?"

"That's right, certainly. But I was not informed that you had made any modifications in our weapons. I asked about—I asked you, Dr. Welby."

"You did." Welby was prompt and crisp. "You asked whether there was any modification that would interfere with the flight of the ship."

Kane smiled at him, not in humor. "We are going to be technical, are we? According to *my* memory, I asked you about *normal* operations—"

"A moment," Kopal broke in. "And another question. When we jumped, were you expecting to arrive in the middle of the enemy?"

"Don't try that one, Dr. Kopal," Kane snapped back at him. "You'll lose. This is a warship, and we are at war. You heard Sergeant Candy, just now. Before we jumped he was closed up at his gun station. Standing by. Every man on this ship was at his fighting station. That is service drill, mister. We were ready, just in case. And you effectively crippled us. That's all I had to establish. The rest will be decided by more competent people than me."

Alvarez made a sign. Kane glared at him. "Permission to speak, sir? Dr. Kopal, just what is this gadget of yours supposed to do, anyway?"

"Hah!" Kopal snorted. "At last somebody asks a sensible question. But first something else. Mr. Candy, you can tell me, on the aimer-box of the launcher there is a small lever, yes? In the position up-and-down it is for what you call power? Over to the right it is for what you call hand, is free of the gearing, right?"

Candy thought a moment, then nodded. "That's right."

"Good! And when that lever is far over to the left?"

Candy frowned. "That's the locking position. For secure. Locks the trainer in midships set, saves wear and tear on the gears."

"Ah! That was my error. That I did not know. I thank you. Now, commander, I can tell you. I personally set all

the levers to this lock position because in that position my gearing is operative. It had not occurred to me that anyone would reset them; but, of course, like everyone else, I did not expect an engagement so soon! That is not an excuse, but an explanation.

"Now for you, Lieutenant Alvarez. With that lever in the proper position, and with my observer instruments here, plus an assist from the computer, all the weapons are automatically controlled. The sequence is thus. As soon as the enemy comes within the field of the gun scope—which I can see here—it is identified, and the gearing locks on to it, follows it, calculates distance and aims automatically. As soon as the enemy is within missile range, also computed, the signal is transferred to your desk, there. Ready to fire. And you fire, from there, when ready. Not from down there, by hand and eye and guesswork, but from here, by computation with precision. For the crew in the weapon bay is nothing more than to reload and make ready. The accuracy is guaranteed!"

There was a silence in the control room that grew and stretched tight, until Candy broke it. "You mean to say you can do it all from here? Aiming, firing, everything?"

"Exactly so. I am told that you are a good shot, sergeant. I have reason to be grateful, perhaps. But I bet the computer against you anytime!"

Kane eyed the big tech-sergeant curiously, saw him scowl. "I've got more sense than to buck a machine, mister. But you'll always need men down in the bay, if only to reload!"

"We'll always need men, Candy," he put in. "Just in case the gadgets go haywire. Dr. Kopal, do I read you right? Are you saying that the weapons, so far as you were aware, were all set to be guided, aimed, and fired from here? By you?"

"Of course! I was doing my part. I had the enemy ship sighted. I saw Lieutenant Alvarez make the signal to fire—and nothing happened! I got up, quickly, to go to him and ask what was wrong—and that is how I got this!" He

rubbed his middle ruefully. "And then, of course, I was in no position to explain anything at all."

"I see." Kane took a moment to rearrange his thoughts in the light of this new data. Ninger was staring at him intently. Miss Kramer's face was a mask. He shifted hurriedly to look at Candy, and then at his officers. "This changes things a little. Howie?"

"I think it does, Kenny. An honest error?"

"Yes. Dr. Kopal, in view of what you say, I think I should suspend judgment a little, at least until we've had a chance to try out your devices properly. Candy, I'd like your agreement and cooperation on that."

The tech-sergeant scratched his jaw then shrugged. "I would sure like to see it work, sir. If it's as accurate as he says—those shots of mine had a lot of luck in them, and we were close in—if he has a gadget that can smack them right home every time, I'm all in favor."

"Fine. Then I will leave it to Mr. Alvarez and yourself to fix up some kind of dummy target routine. Make it tough but fair, and have it all set to run when we move out again. Mr. Alvarez?"

"Shouldn't be too hard to work out, sir."

"Dr. Kopal, any objections to that?"

"That is what I am here for, to show you."

With that concluded the control room slowly emptied. Kane watched them go away, Ninger and Miss Kramer in head-to-head whispering, the others all in deep thought. He felt drained again, and it took him a moment to unearth the cause. Now, if Kopal's gadgets worked, he had a fine ship, a fast ship, a ship with real muscles, so why the gloom? Then he had it. This was the same old thing he had griped about before. Just bigger and better weapons to bash the snakes. This was all there was to Miss Kramer's fine talk about dedicated research and effort to find a new approach. He shelved it bitterly, turned his mind to routine matters. There was plenty to do still, and the minutes were wheeling past. As old Omar had it: "The Bird of Time has but a little way / To fly—and, Lol the Bird is on the Wing!"

It seemed like no time at all before Petrie was at him again with a repeat liberty rota to sign. "Same as last time, sir, if that's all right?"

"No objections. How's the power deck state?"

"About finished. And the icebox project is close. Old Welby helped out a bit on that. He's handy with tools."

"Good. You'll see about bringing back a cargo of fresh fruit and meat, then? Don't overdo, mind, we don't want the stuff going rotten on us."

"Even at that it would be better than the dehydrated felt we get out of the machines." Petrie shuddered. "I keep telling my stomach how fine and good and nutritious it is, but it refuses to believe me."

Kane grinned, then sobered quickly. "Keep an eye out for booze on this trip. The men haven't had all that much to do, and you know how it is with shore liberty."

Petrie was appropriately grave. He knew. Vacillating gravity-states and alcohol just did not go together; but there were always those few men, otherwise intelligent, who couldn't resist smuggling aboard a few fluid ounces of bottled courage. The results were always disastrous. He shook his head and said, unwillingly, "Ninger has a bottle somewhere. He's careful with it, mind, but you know how the smell carries."

Kane scowled. It was always the smell. In the clean and astringent artificial atmosphere of a ship the slightest smell was immediately broadcast. A fresh-peeled orange in one compartment would have every man's mouth watering within seconds. And stale hooch on the breath could sicken undeserving others faster than anything. "I'll talk to him about it," he promised. "I can't discipline him very well, but I can bear down on him."

"Get his girl friend to put the pressure on," Petrie suggested.

"Miss Kramer is hardly likely to accept suggestions from me, mister. And she is *not* his girl friend!"

"No, sir!" Petrie took the hint swiftly. "Thank you, sir." He went discreetly away, leaving Kane with a sour taste in

his mouth. He ran into the energy expert about half an hour later, while making a personal inspection of the torpedo bay repairs. Ninger was there with a sketch pad, blinking his eyes against the intermittent flare of welding, making some kind of diagram. As Kane came close his nose told him all he needed to know.

"My turn to seek a word with you, Dr. Ninger," he growled. The saturnine scientist turned from his sketch to peer. He even *looked* stoned.

"Not now, Kane. Very busy. Later."

"Now!" Kane put steel in his tone. "Man, you stink like a brewery! Don't you know alcohol is strictly forbidden on a ship?"

"Eh?" For one instant Ninger looked completely demonic, his brows in a crisp black line across his dark face. "Mind your own business, Kane! I am not one of your crewmen, damn you. Leave me alone!"

Kane quelled the blistering retort that came, glanced around at the too many curious eyes and ears of the repair gang, then went away, climbing the spar tube and turning sharp right, through the forward battery room. He had one moment of uncertainty. From the moment he had allocated this space to the unwanted civilians, he had studiously avoided it, preferring not to intrude. Now he had no choice. He swung the hatch open, glided in, with apologies all ready to pronounce, but they weren't needed. At first glance the space was clear of people, although full of offensive clutter. Those hammocks should have been lashed and stowed, not left hanging. All that personal gear sculling about. The place was a shambles by his orderly standards. Civilians!

He repressed his distaste, used his intelligence. That solo hammock in the corner would be Miss Kramer's; so one of these three would be Ninger's, and the first place to look. That was where a man usually chose to hide something personal and private. He drifted across, put out his hand, and almost laid it on Kopal's face, barely checking himself in time. Fortunately the burly predictions expert was fast

asleep. Nothing wrong with that, in the circumstances, and it narrowed the search. Kane struck lucky on his next try, unearthed not one but three sealed flasks. It took only a moment to crack and sniff one. He went away fast, feeling as guilty as any thief, back to the control room, cudgelling his mind for somewhere to get rid of the burden. Alvarez came in within moments, and unwittingly offered a solution to the dilemma.

"Made any hard decisions about targets, mister?"

"Just been working on it, sir. I've talked the repair-gang foreman into making up some cans, seven or eight, about the size of a torp. I reckon to load them with scrap metal chips and swarf—steel, ally, magnesium—and fill up with hypox. They should make a visible flare on impact."

"Sounds fine. Here, see if you can lose these inside one or two of those cans." Kane hauled out the flasks, and the gunner stared.

"Where'd you get that—sir?"

"None of your business, mister. That is something I'm keeping on *my* back. But here's an order. I take it you'll be going on the next liberty? All right. On the return trip you make it your business to be sure that none of our civilians bring any more like this aboard. Keep an eye on them. Got me?"

"Sol!" Alvarez nodded. "It would have to be one of them. I knew damned well it wasn't any of my gang. They've got more sense!"

"Yes, until they get a whiff of the stuff. You know how it is. Now, get it straight. The load is mine. You don't know what's in these, or anything about them. Just lose them, right?"

"Right!" Alvarez tucked one under each armpit, zipped up his coverall, dropped the other in his cap. "Ten minutes from now, and no one will ever see them again. I guarantee it."

The minutes and hours began wheeling away again. Once more Kane was surprised by Alvarez, fresh and gleaming, all ready for shore liberty.

"You know, sir," he said, wistfully, as Kane deserted his chair to go and change, "I wouldn't mind all that much getting badly grokked up—if only I could be sure I would get detailed to a base like this. Imagine it, on the ground, in one of those missile bases. Fresh air, good grub, sunshine!"

"You think you mean that." Kane was gruff. "You didn't think it all the way through. You're a patchy yourself, we all are, on this ship. Just how badly do you have to be grokked up, d'you think, before they *can't* put you back together again? Before they transfer you to a haven like this?"

He left the gunner to think it over, brought him back to it as they mustered on the hospital shuttle deck with the rest. "Do as I did, mister," he suggested. "I was thinking about replacements. We are four men short. I asked the base commander if I might get spares from here. He wasn't too keen. Just step along a bit, with me, and take a look at our pilot, and see why."

Alvarez saw, and went gray under his natural swarthiness. What was left of a man sat in the control chair, held in place by web harness. From the knees down he was all prosthetic, the struts and joints intimately connected to steering pedals. The rest of him was normal and human until you reached his head and saw that where his eyes should have been was a metal box-band around his skull, with gadgetry and wiring that fed directly into the screens and sensors of the shuttle. Kane had seen it, and he knew how Alvarez felt.

"I checked," he said. "That man is a volunteer. This is something he can do so he does it. Anything, rather than be written off. What is a man—apart from what he can do?"

As he sat beside the silent, shocked gunner on the way down, his thoughts were bleak. It was one thing to disown war, to rant against it, but what good was it, when the instinct for combat, the territorial imperative, was built into the human fabric? When a man stops fighting back, he is no longer a man. Someone had said that, some-

where. "So if I apply that to me," he thought, "I am no longer a man. Or am I fooling myself?"

He was still trying to sort it out as he lay on the raft and stared up at the greenish blue sky, lulled by the gentle heave of the pool's waves. Was there an answer? Somebody had to get out there and fight, or let the snakes have it all their own way. No one wants wars, but we keep on having them. Somebody had said that, too. Kane floated, felt very small, just one sand-grain on an endless beach, and was suddenly and wryly amused at his own conceit—that he stood a chance of sorting out the whole cosmic enigma. He wondered if the snakes had philosophers, or a philosophy. It was strangely difficult to imagine that, difficult to visualize them. There wasn't even any way, so far as he knew, of telling them apart. Their ships were all enigmatically alike. No marks, no insignia, nothing. And that nerve-rasping "sense" of perverted evil that they brought with them—which the scientists said was some new kind of energy field effect. Why not just plain hatred? It felt like it.

He rolled over, propped up on his elbows to watch a crowd larking about at the other end of the pool. Nurses, by the look; probably some of his own men in there too. The raft lurched suddenly, and he turned to see Miss Kramer scrambling up on to it.

"I was hoping you'd repeat." Her smile was strained. "I want to warn you. Marius is searching for you. He seems to be upset about something. Do you have any idea what it is?"

"Ninger—here? Yes, I think I know what's eating him. You'd better clear, it won't be pleasant." Kane sat up, cast a glance around, and then sighed. "Too late. He must have followed you. Here he comes now!"

Ninger was thrashing the water violently, heading straight for the raft. Kane braced himself for what he felt was going to be a nasty moment.

XI

NINGER BOILED up over the edge of the raft furiously. Kane, ready for argument, took the cue just in time and hurled himself aside as the physicist threw a savage kick. He wasn't quite fast enough. The kick caught him on his side. It hurt. It jolted him away and into the water. He surfaced, blowing, to see Ninger crouched on the edge, baring his teeth like an animal.

"When I turn my back," he snarled, "you steal my life! For that I will kill you!"

"Don't be a fool, man!" Kane trod water cautiously, keeping clear of more kicks. "Let me up. You've got this thing all wrong!" He saw Miss Kramer shake loose from her paralysis of astonishment and move to touch Ninger, saw him turn on her, shoving her away so violently that she fell. He snatched that small moment to haul himself up out of the water and on to the raft. Ninger spun back and Kane saw, for the first time in his life, a man foaming at the mouth. He offered reason, "Hold on, now—this can be—" but it was futile.

Ninger came at him with hands out and crooked into claws, ready to bite and tear, no longer quite sane. It was no time for finesse or delicacy. Kane snatched at one arm, hauled, and spun himself inside it, giving Ninger his shoulder and back, hard, then rocking away, watching his man whoop for breath. Ninger came back, and this time Kane fended him off with a left palm, stood him into position, and smashed him across the small ribs with a flailing right chop, then another from the other side; blows to make a man fold up and be sick, but not to knock him unconscious. Ninger folded, but he was unwilling to give up. He forced himself forward still more, waving his arms wildly. Miss Kramer came between, grabbed Kane's arm frantically.

"Don't hurt him!" she cried, and interfered just enough to let one of Ninger's wild swings connect with Kane's ear,

jarring him aside and setting bells off in his head. He shoved her away angrily.

"Get off me, damn it. Tell *him!*"

Ninger was getting back his breath, his face contorted into a mask of fury. He charged forward again. Kane armed him off, trod aside, realizing that this had gone on quite long enough. The sensible thing to do, now, was to finish it off quickly. As Ninger whirled and scrambled back for more, he stood him up again with a left, then hit him with a roundhouse right that travelled more than six feet before it connected. It was a good solid punch and needed nothing added. Ninger was completely gone before he hit the water. Kane sighed, rubbed his knuckles just once, then leaned over and went in, grabbed the unconscious man, and started kicking for the nearest shore. In a moment or two Miss Kramer came splashing up alongside, willing to help.

"Better get on ahead and organize some help," he advised. "Like a straitjacket. He may still be crazy when he comes round."

By the time he got there, there was a small silent crowd by the pool edge with many hands ready to take over. Kane stood away, panting, and let them get on with it. Alvarez came sidling out of the crowd.

"Maybe I should have stopped him, sir," he confided. "I saw him making your way, and he looked upset. Savage."

"More than that," Kane puffed. "I think he flipped all the way." He massaged his knuckles again, then lifted his head. "Somebody's on the ball. Here comes the meat wagon." He watched Ninger going aboard still sack-limp, and Miss Kramer inviting herself along. The ambulance went away.

"You must have hit him real hard, sir," Alvarez guessed.

"Had to. He was all set to start biting and scratching. This is a mess, all right. Look, break up that crowd. I'm going to get my gear and follow this up. There's something screwy here."

When he had regained his own uniform he ventured into the ladies' compound to retrieve Miss Kramer's things, then

set out on the long walk along the pool side to the base hospital block. He had a lot to think about, but not much hope of getting answers. Assume Ninger was "that way" about Miss Kramer, and that he would be inflamed at seeing the way she had headed directly for the pool, the raft, a presumed rendezvous. Assume, too, that he had missed his cache of hooch and had guessed, immediately, who had taken it. Add it up and you had a case for annoyance, even rage. But was that enough to shove a man over the edge of sanity? Kane thought not. There had to be something else.

The hospital was a cool, familiar-smelling place. A fat and elderly receptionist pointed him along a corridor. Miss Kramer sat on a bench at the far end of it, looking tragic. Kane held out her clothes.

"You'd better change. No good sitting there in the cold like that."

She looked at him, through him, ignored everything but the proffered bundle. As if he wasn't there she peeled off the wet swim suit and put on her dress, was just stepping into a shoe when a nearby door opened to reveal a small, balding man in the act of removing stethoscope earplugs. He eyed Kane.

"Do you know this man, commander?"

"Know him? Only by name and a very brief acquaintance. How is he?"

"Not good. Puzzling. I would very much like to have his medical history documents, even his registration card would help."

"If it is among his effects I can have it sent down—"

"I may be able to tell you a little," Miss Kramer interposed. "I have been associated with Dr. Ninger for some time on various projects. I knew—we all knew—that he had to take drugs regularly. Some kind of vitamin-complexes, I believe. Of course I don't know any details."

"That would account for some of his responses. I have already given him quite a dosage. I would like his medical records, commander."

"Right away. Just one thing," Kane felt inwardly shrunken, "would it be the kind of dope a man would take in—alcohol?"

"That's quite possible. It favors the rapid dispersal of the suspension into the bloodstream."

"Thank you." Kane made haste to the control tower, and within the hour the shuttle was back down and discharging Dr. Welby, who hoisted an envelope and called to Kane,

"This is what you wanted, commander?"

"Not me. In there. Miss Kramer will explain." He walked up to the pilot's cubicle, rapped on the transpex. "Take me back up, please."

"You have another four hours." The pilot's voice wasn't improved by his metal larynx, but something human came through.

"I know. I have all the rest of my life, too. Take me back up."

Petrie was astonished to see him. "Hey, what happened, sir?" He took a second look and added, in awe, "Somebody hung a shiner on you!"

"Dr. Ninger blew off and tried to beat me into the ground. I had to hit him. I may have killed him for all I know." Kane eyed the clock. Six hours more and they would be lifting out. "I'm tired," he said. "I'm going to turn in. Call me half an hour before stations, unless something urgent comes up."

"It won't," Petrie promised. "Don't worry about it, sir. If Ninger had taken a poke at me, I'd have done the same."

As the intercom buzzer stirred him, and he armed himself out of his bed, Kane could feel the difference in the ship, the subtle nuances that meant the difference between dead and alive, just by the contact of his feet on the deck. Machinery, the gentle thrum and shiver of the ship's own machines coming up to power, so different from the deadness of dock-side energy. He freshed his face and hands with a wash tissue and went on up to the control room. Petrie, at his post, made a brief hand wave, didn't interrupt his busy interchange with base H.Q. Kane settled into his chair, scan-

ning dials and gauges automatically. He moved a switch. "Mr. Alvarez?"

Within seconds the reply came. "In heavy stores, sir. Checking the deck. Be through in about five minutes." Checking the deck, the routine last-minute inspection of all compartments, sections, hatches and seals, to make sure everything was shipshape, stowed away or lashed down.

"Mr. Harmer?"

"Power deck here, sir. All systems Go and raising power."

Kane waited for a gap, then questioned Petrie. "The civilians?"

"Ninger won't make it, sir. He's a sick man, but he'll live. The others ought to be along any time. I called them the same time I—hold it!" He clamped a hand to his ear-phone and scribbled rapidly. "Right. Got that. Hold on for a reply." He slid the paper across, spoke rapidly. "It's about the replacements, sir. I checked over several suggestions from base, but they were all hopeless. Airey's Number Two swore they were the best he could do. I all but cried on his shoulder to persuade him to do something, anything. And now this!" Kane stared at the scribble, struggling to read it.

"'Four medical doctors, ex-*Canada*, were en route to Capella Base, now demanding first available transport there, willing to make crewmembers, temporary basis *Aspire*. Advise.'"

"Doctors!" Kane growled. "We have too damned many doctors aboard this can right now!"

"Medicos would be different." Petrie suggested delicately, "They wouldn't be in the way. Capella needs them badly, from what I hear. And they wouldn't be dumb jerks, at that. Not qualified doctors. They would catch on fast. We could do a lot worse—or go short!"

"You're right, mister. And as they are willing to make up the numbers and work, why not? All right. Okay it. Rush! We have a deadline to meet." Petrie got busy. Kane looked around to see Dr. Welby come in, assisting Dr. Kopal to his desk.

"You sure you're fit enough for this, Dr. Kopal?"

"A little stiffness is all, commander. All right otherwise."

In a moment Alvarez came gliding in, and Kane hooked him with a finger. "Job for you, mister. Four new hands, should be at the airlock any time now."

"Just got the names through," Petrie announced, sliding another memo across. Kane handed it to Alvarez, who read aloud, carefully.

"A. Bruno, M.D., L. Egan, M.D., P. Rosegger, M.D., M. Yaddy, M.D. What's all the M.D. stuff, then?"

"They are all medicos, hitching a lift to Capella—but they are crewmen so far as we are concerned. You will grab them at the airlock and place them just as they come. We can sort it out later if necessary. Candy and Borosov in A tube will take Bruno. Hogan and Emberg in B tube will take Egan. And the other two down to the power deck with Mr. Harmer."

"The shuttle is coming alongside now, sir," Petrie advised.

"That's it then, Mr. Alvarez. Sort them out and get back here."

The minutes went on wheeling away. Miss Kramer came in, glacially aloof, to take her seat opposite Welby. He saw them crane heads together, heard the old man murmuring,

"We will have to realign our data, my dear, now that Marius is no longer present and with four new crewmen coming aboard."

"Of course," she replied, "we would have had to do that in any case, because of the repair work. And again, after the target firing."

Kane wished he knew what they were talking about, but there was no time to dwell on that, now. The digits on the clock danced relentlessly on. Alvarez came swooping back to announce everything taken care of with the new arrivals. The power gauges climbed steadily to optimum and hung. Kane switched to general address. "All hands. Hear this. Stations for flight. We cast off in five minutes. A tube, report."

The reports came in smoothly, all clear and checked. He warned the power deck that he was going to try main

thrust and steering. That took three minutes more, as the ship shuddered against restraint while he gently applied power. All sweet and smooth. He nodded to Petrie. "*Aspire* to Base. Cast off!"

He nursed the controls, alternating between panel and screen until they were safely clear, then bearing down on fuel and gauss until the gravimeter showed a steady one-gee. The platform of Scott Base fell away to become a bright sliver against the half-dark disc of the planet.

"How is that with you, Dr. Kopal?" he asked.

"Is fine." The burly scientist nodded, raised a hand. "How soon do we try target practice?"

"We'll get on to that right now, as soon as we jump clear. Mr. Petrie, a point on Capella, please. We might as well jump in the right direction. And I think we'll try a maximum jump, this time, just to see what this bird can do." Petrie scowled over his board then put up a point for Kane. The XY axis crossed away down to the left. He nibbled at the controls until the point rode central, then bore down on the thrust. "Better take a breath, Dr. Kopal. We'll be up to three-gee by the time we jump." He passed the word to the ship's company, set himself against the growing drag, watched the needles slide around—and then came that indescribable moment of strain into impossibility and out again, and he hauled back fast on the controls, easing off the thrust.

"A fix, Mr. Petrie," he said, and, on the microphone to Harmer, "how did we do on batteries, Howie?"

"Just fine. We only lost 3 percent charge, and we're putting that back right now. Real slick!"

Petrie straightened up with an admiring grunt. "This is no bird, sir, it's a bloody kangaroo. We made better than nine lights that time. I make it nine-point-one-oh-six. *Some* jump!"

Kane felt a glow. A *good* ship. He contrasted this simple drill with some of the sights he had seen on the big ships, run by book-swallowing brass. Men giving orders, other men relaying them, yet other men carrying them out. Still more men standing by to trip out and restart, just in case the

pile died and an overload fell on the batteries. All of that for what? Despite all the gruelling training, that stiff-necked business couldn't come anywhere near the computer's mindless efficiency. But of course a computer didn't have to stomp to attention and say "Yes, sir!" And you couldn't bawl out a computer, either. All at once Kane realized a simple truth that had never struck him before, that the sweet taste of rank and status had nothing whatever to do with talent and ability. It was nothing more than the power to lord it over other men! "I say to this one, come—and he cometh!"

"Right!" he announced, wrenching himself away from contemplation. "We'll try one more. This time maybe we'll be able to plot where we're going before we get there. See if the computer can put up a star map for us."

Petrie stared at the result, scratched his head, consulted a file. "That's going to put us right in the middle of that damn dust cloud ten lights this side of Capella, sir."

"Dust cloud?" Welby queried anxiously. "Is that wise?"

"Not a hazard," Kane assured him. "Just a nuisance. But it might be just the place for our target practice, eh, Dr. Kopal?"

"The dust will make difficulties for my instruments!"

"What d'you think it does for human layers? In any prolonged engagement the ambient space is liable to become full of fragments and debris. The human gunner has to cope with it. Let's see if your machines can."

"My instruments see faster and better than any human. I accept your challenge, commander. Do it!"

"All right. All hands, hear this. We are going into one more jump, and then we'll have some target practice. Three minutes to jump."

This time, as they twisted out into real space, the screens were full of diamond sparkles; a pretty sight if you weren't worried about a solid ship that had to plow through it at high speed. Kane pulled the drive down to a whisper, stabilized it at half-gee. "In case any of you are interested," he said, "that is probably real diamond dust out there. If

we cruise through it long enough we'll acquire a really fine polish—and a damned thin hull. It's all yours, Mr. Alvarez."

The gunnery officer took over the address. "A tube, stand by to launch one target missile at random and by hand, when I give you the clear. B tube, you will set both launch-racks to the lock position, as already instructed, and do nothing further until firing is complete. Report."

The reports came back promptly. Kopal eyed his board and confirmed that he had control. "Throw your target any-time, Mr. Alvarez."

Kane concentrated on the scope sweep, knowing roughly where to look, felt the distant thump of release—and there it was, a fine white spot, high and left. He spun the ship swiftly to bear down on it, touched the throttle, saw the red light wink on the gunner's board, heard Alvarez mutter, and there went the whump of a torpedo, leaping away. Now there were two spots on the screen, against a torrent of "grass"—two spots on a collision course—and then nothing. He glanced up at the main screen in time to see a coruscating flare leaping away into darkness.

"Number Two target away!" Alvarez snapped, and Kane grinned grimly as he saw the spot leaping away at a totally different angle. Candy wasn't making it easy for anybody. He brought the ship around, straining against the sideways thrust. The second target went the spectacular way of the first.

"That would be enough to convince me," Kane admitted, "but we've already arranged a parallel test with corroders. Do you mind?"

"I should mind?" Kopal grinned. "I'm winning!"

"We have faked up a couple of torpedo shapes," Alvarez explained, "about the same size, primed to explode if hit by corrosive. You're doing all right by me. I won't give a damn if you miss these, frankly."

Kane, privately, agreed with that. To hit something with a torpedo—with its instruments and proximity-fuses—was one thing. To hit something the size of a torpedo with a corroder—can was something else again. Like throwing rocks at butter-

flies. But Kopal had worked well. Two target torpedoes were duly blasted into incandescence with impeccable efficiency. Kane was impressed. He took back the microphone from Alvarez.

"All hands. The target exercise is complete. You will be pleased to learn that it was 100 percent effective. Four shots, four hits. Stand-down for thirty minutes." He rose from his chair and went across to Kopal, offering his hand. "That was the most impressive demonstration I've ever seen. You've really got something there."

"Thank you. It was gratifying. I am only sorry that it could not repair the earlier tragedy."

"Yes. I can't speak for the official mind but, so far as I am concerned, this cancels that. I'd be willing to forget the whole thing."

"I'm sure you would." Miss Kramer came up by him, her tone icy. "It would suit you very well to have *all* your mistakes forgotten, I'm sure."

Kane stared at her. "You'll get your turn, Miss Kramer, whenever you're ready. Right now I'm going along to the messroom to make myself known to the new men. Their lives are in my hands, you know."

XII

WELBY CAME up to his shoulder as he moved away. The old man put on a soothing tone. "Please do not pay too much attention to Hannah, commander. She is not usually so tactless. The thing is we've been ramming our heads up against the military mind for so long that we all tend to get short with a man in uniform anyway."

"Forget it. What about your gadgetry, Dr. Welby? When do you want to try out whatever it is? Now? I should say this, that one more jump like the last two and we'll be within spitting distance of Capella, and no one will be more relieved than me when we get there. So the sooner the better."

"We are ready now," Welby murmured. "I would prefer to be out of this dust cloud, and by no means close to Capella, or any other massive body; not for the preliminary tests. But otherwise we are ready. What I would like, if it is at all possible, is the chance to explain a little first. To everyone. Otherwise the phenomena which accompany the shift may be alarming."

"Just as you like, Welby. We can run out of the dust easily enough. And you can have the microphone and talk away. But first I want to meet the new boys and put them in the picture." He heard Alvarez, over the address.

"New crew members to the messroom, now!"

He was halfway to the autochef wall when he saw something that halted him in midstride, his eyes wide. Three of them already stood by one machine. He caught a flicker of side movement, and here came the fourth, helmet thrown back and bearing a long sooty smear of carbon grease from the power deck. He started forward again, choking on futile words. Feminine chatter died, and four pairs of eyes swivelled to focus on him.

"I'm senior," said one, in a rich brown contralto, "so I guess I'd better do the introductions. I'm Maybelle Yaddy." She smiled and waved a dark hand to her companions. "Anthea Bruno"—this was a blonde, but also Latin—"Laura Egan"—a freckled and utterly wholesome brunette—"and Petra Rosegger." This last a fiery redhead, very intense. "That's us. And you, sir?"

"I'm Commander Kane, captain of this ship." His own voice sounded alien in his ears. "Is this some stupid joke? You're women!"

The smiles disappeared. Miss Yaddy sharpened her voice. "There's something wrong with that? We're all qualified doctors. We're needed at Capella. This seemed the fastest way to get there. We thought—I guess we were wrong!"

"Wrong? About what?"

"The way you accepted us, detailed us to crew stations, we thought you were a sensible man, commander."

"We did the job!" Miss Bruno declared, confirming her Latin look in her intonation. "We do not expect favors!"

"I had no idea you were female. There was no such information on the signal. Had I known, you'd never have been allowed to set foot—"

"Now it is too late anyway," Miss Rosegger stated flatly. "We are here. We will do what we have to do. We will be no trouble."

"But," Kane took off his cap, as if that would help, "as gun crew? Grease monkeys?"

Miss Yaddy made a gorgeous smile. "It isn't so tough. We've done a lot harder work than that before. Besides, commander, it will be instructive. We have to deal with men who've been hurt and injured in ships like this. Now we'll have the chance to see and know exactly how such injuries happen. It will be an education."

Kane breathed hard. Cold logic told him that they had a case, that there was no reason at all why they shouldn't make crew. Except that they were female. Whichever way he added that factor into the picture, it fell out again. Billets, for just one thing. Crew billets were immediately aft of the ammunition store in each tube, and with good reason. He had wild visions of segregating these women into one billet, and immediately saw his crewmen having to scamper three times as far as was necessary to take station. Confusion! Then he had thought for the shoulder-to-shoulder cooperation in the turrets, the adjectival tension of fire-reload-fire, with the ship buck-jumping and weaving—and he felt cold. But he had to say something.

"I seem to be stuck with you," he growled. "Very well. Our program is to conduct some immediate tests of new equipment, then to jump to Capella. I do not need to remind you of what happened at Scott, nor to point out that we may encounter snake ships at any time. It will be up to you to learn as much as possible about your job, as fast as you can. In the crunch we need every eye, ear, and hand in the right place at the right time. You're used to having

other lives in your hands. This time the mistake you make may cost you your own life. Remember that."

He wheeled away to see Alvarez and Miss Kramer approaching. He ignored her, concentrated on the gunner. "Did you know—?" He jerked a hand back, but the question was superfluous. The astonishment on the Spaniard's face told its own story.

"They were all suited up. I didn't—" He muttered something improper in his own tongue and then demanded, "What do we do now?"

"We treat them like crewmen, mister." Kane spun back again, with a quick glance at the messroom clock. "You have ten more minutes, ladies. By the end of that time you will be on station, ready for action!"

Laura Egan smiled. In sugar-sweet Southern accents she said, "Won't you have a coffee, commander?" He took it ungraciously and went away, back up to his control position. Petrie eyed him warily.

"Trouble with the new boys, sir?"

"You might as well know the worst, Mr. Petrie. Take ten and find out for yourself." Petrie went away. Kane sat and gloomed into the middle distance. Spacemen believed, traditionally, in jinxes and hoodoos and other omens and portents. He had always considered himself too rational to subscribe to such things. Now he wasn't so sure. To drag his mind away from such follies he made himself busy with scanning and checking; by the time the stand-down was done, he had the satisfaction of knowing that the ship was well clear of the dust cloud—and, so far as he could tell, functioning normally. He took the microphone again.

"All hands. We are about to conduct further tests. Dr. Welby will speak now and explain as far as possible what we are going to do, what he will want us to do. I should explain, first, that this is going to be as new to me as it is to you. Dr. Welby, will it be in order to ask questions?"

"I hope you will, but not too many. I will try to make my answers as clear as possible. Perhaps I should start with some background. I will assume that everyone know, roughly,

how the space-jump works, that by means of field forces we are able to reduce rest-mass to zero, thus putting the whole of the ship and its contents into a 'forbidden' state, from which it instantaneously escapes. There is no need to go further into the complex details of that. It will help, however, to remember that the jump itself is the outcome of research into rest-mass and resonance physics. Another outcome of that same research is the inertralloy which covers the ship's hull. Inertralloy is, in fact, a substance which can only just exist without breaking the rules, and that is why it is virtually impervious to most forms of radiation. That line of research still goes on. What we are about to try out is just one more line of inquiry into the forbidden states of matter." Welby paused a moment, frowned in thought.

"I have used the word 'forbidden' rather freely. Perhaps I should qualify that. For instance, for matter to have rest-mass zero is impossible—but that is true only of the universe as we know it. What we call the 'real' universe. In some other universes that would not necessarily be so. It may be difficult for you to picture other universes, but this can be done quite easily by those who are trained in such things. Mathematicians, for instance, often hypothesize universes wherein there are negative volumes, and many more than three dimensions, and so on. We need not go into that, either. What concerns us, now, is that in other universes, different from that which we call the real universe, the rules will inevitably be different, just as the language of France is different from that of China, and both are different from Arabic. Our researchers have shown us a way, not only to construct such a different universe, but to build it around the ship. To enclose ourselves within it. That is what we propose to do now."

Kane cleared his throat. "How," he demanded, "will it be different?"

"That is something we are not quite sure of altogether. There are certain essential basics, of course, but the fine details will be different. It would probably help if you visualize us as contained within a sphere of energy which touches

the real universe only at a few points. That sphere will not be stable. To create a stable universe is not the intention, just yet. It will be intermittent, building up and breaking down rapidly; but it should be enough to allow us to bypass ordinary Einsteinian space-time limits—"

"Hey!" Petrie exclaimed impulsively. "Do you know what you just said? You've invented a space-warp!"

Welby glared, his gray eyebrows high. "Space-warp? What are you talking about, Mr. Petrie? I never heard of such a thing!"

"Never mind that!" Kane broke in harshly. "I think we got the general idea. Is there anything else we need to know? Things to do?"

"Very little." Welby rubbed his nose thoughtfully. "There's the instability—but I've mentioned that. And we really do not know what our relationship coordinates will be. In other words, where we will come out with reference to our own space time. That is really the purpose of these preliminary tests, to get some basic data."

"I see. And you'll do it all from here?"

"Not quite. Mr. Harmer, can you hear me?"

"I hear you, Dr. Welby."

"Good. In the pile room, directly to your rear, you will see a large, gray-covered box, secured shut with wing nuts. Would you open it, please, and throw the two switches you'll see inside?"

"And then what happens?"

"Nothing at all. The master control will then be powered, here on my panel; that's all."

Kane began to sweat. The old man sounded quietly confident, but his were big words. To switch an entire ship into another space time! "How long do you plan on staying in this other place?" he demanded.

"Pseudospace, we call it. How long? It's hard to say. Just long enough to refine our data to the point where we can organize it. To begin with, at any rate. This is all very new. We must learn as we go." Lights came up on his panel and he said, "Thank you, Mr. Harmer, that's fine."

Kane eyed the clock, then Welby. "You want a count-down?"

"It will take a few minutes for the instruments to stabilize, but when that is done, the transition can be at any instant, by choice."

"All right, I'll give you five minutes. All hands, we switch in five minutes from now. Maintain stations." He cancelled the general address. The control room went very quiet. To break it, he asked, "What's this pseudospace going to be like, have you any idea?"

Miss Kramer snorted her disdain for such a foolish question, and Welby hastened to put up a diversion. "You know, commander," he murmured, "I'd been led to believe that shipboard life was largely monotony, broken by short and intense periods of action."

"So it is. You can't go by what we've been doing so far."

"No? Then what is the normal pattern?"

"Well, just what we are *going* to do. That is, jump as far as warbase, report in for orders and patrol sector, jump there—and then stooge around on patrol. Follow a standard search pattern and wait until the fuel runs out, or the snakes show up. That can get dull, believe me."

"Dr. Welby," Petrie had a delicate sound, "just how much do we know about the way the snakes get from here to there? I mean, do they jump like we do?" Welby shook his head, rubbed his nose.

"No one really knows the answer to that. We have very slender evidence that would seem to indicate this much, that their method of movement is different from ours. As you know, we jump from point to point, and we convert all our energy-of-motion during the jump so that we arrive at a standstill, literally. All the machinery has to restart, and the drive, velocity, everything. Whereas, by eyewitness reports, the enemy ships materialize at high speeds."

"That's true," Alvarez agreed. "They sure do that."

"There you are. Slender evidence, but all we have. Why d'you ask?"

"I was just thinking," Petrie shrugged, "that maybe the

snakes come from this other space we're going to, and we might have a lively time if we accidentally run into them!"

Miss Kramer snorted again, frankly and openly. "It is quite obvious," she snapped, "that you haven't understood a word! Pseudospace isn't a place, some other dimension! It is an artificial construct, a partial space-time framework which we ourselves create. There won't be anyone else, or any thing else."

Petrie looked appropriately chastened. Kane felt angry for him. He glanced at the clock, at the tumbling digits. "We'll soon know," he said grimly. "Set your switches, Dr. Welby. I'm establishing a ten-second delay, now!" The figures winked away to the beat of an impersonal "beep" that sounded through the ship. Three—two—one—and Kane felt himself, the ship, everything slip and fall into chaos. Bedlam nightmare. Insanely flickering light assaulted his eyes. The chair that held him jolted and kicked as if the whole ship were running down an endless slope on square wheels. Sound came and went with the crazy light in a hideously deafening *wah-wah* of noise. Time ceased to mean anything. He knew he was shouting, couldn't hear himself, didn't know whether anyone else was hearing him. The leaping jolting world about him was peopled with squirming molten phantoms out of nightmare. He struggled for breath—and then, as suddenly as it had come, the insanity went away and the real, solid, safe world returned with an almost audible click.

"Like wow!" Petrie gasped, his face sheeny with sweat. "That was no nightmare, that was for real! What'd we do, fall apart?"

Kane let out a breath, grabbed the microphone. "Stations, check. Power deck, all right?"

"It's O.K. I don't believe it, but yes, it's O.K."

The other reports came in similarly. Shaken, but everything seemingly all right. Kane closed the circuit off, eyed Welby grimly. "All right," he said. "Now what the hell went wrong?"

"Nothing went wrong!" Welby dabbed at his brow with

a tissue, and tried to look indignant. "What did you expect, with minimum parameters?"

"Let me try," Kopal offered. "Commander, you know that to determine a point in space one needs three coordinates plus vectors, yes? So, to define a whole volume of space requires many more. In theory a volume comprises an infinite number of points, but that is obviously out of the question. We couldn't handle infinite parameters. What Edgar did was to set up the minimum number of parameters necessary to define a volume of space sufficient to contain this ship."

"The theoretical minimum," Welby amended.

"Why?" Kane demanded.

"Because, very simply, the more data-points we use, the more difficult the problem becomes. You should know that. You yourself explained to us that you set up a computer program to handle all the variables involved in ordinary flight maneuvers."

"All right. You're the expert and I'm not arguing, just asking. But I tell you this. You'll have to do it a lot better than that, and find some way to handle it, or we might as well forget the whole thing."

Miss Kramer inserted her cold contempt into the discussion. "That was merely a first approximation, commander. Of course we will improve. Do not be so quick to admit defeat!"

Kane fixed a stony gaze on her and threw away any pretense of gentleness as he said, distinctly, "You're pretty fast with your mouth, Miss Kramer. If you were only one tenth as good with your performance, your so-called skills, you would give me and my crew much more reason to be willing to chance our lives in your hands." She went paper-white; but before she could dredge up words to throw back at him he swung his gaze on Welby. "When do you want to go again?"

"I need a moment to refine a few values and to hook in another mosaic. Five minutes should be ample."

"All right." Kane flipped the general switch again. "All

hands. We will be trying that again in five minutes, but we hope it will be better this time. There will be another ten-count. Stand by." As he flipped the switch again Petrie leaned over confidentially.

"The old man had better get it better, sir. By the clock, we were in and out of there in four seconds only, but we are now only half a light from Capella, and we were ten!"

"Huh? Why don't I see it on the screen?"

"Because we're pointed the wrong way now. We flipped right over."

"That's not all we did. Dr. Welby," Kane aimed his eyes at the old man, "do you anticipate being able to steer or direct our course in any way, in this pseudospace?"

"Eventually, yes. First we must learn the effective co-ordinates of the space we create, and its relationship to the normative universe. Then we can come to the matter of control and movement. Why?"

"Just a thought." Kane tripped out the drive, played with his control board to flip the ship end-for-end, and there was the giant red disc of Capella flaring in the screen. He cut the drive in again, returning his stare to the elderly scientist. Welby stared at the image, then sniffed and got his nose down to his panel once more, mumbled irritably to Miss Kramer, then looked up.

"I am ready again," he announced. Kane sighed, reached for the microphone. It felt as if he had been shouting at his ship's company for the better part of a lifetime.

"All hands. Setting a ten-count now. Battle stations."

XIII

THERE CAME the same vertiginous drop, but this time into a different nightmare altogether. Rocked by something like a silent thunderclap, Kane felt every bone in his body aching to a stuttering, irresistible vibration that blurred his vision, rattled his teeth, and made it impossible to be sure whether everything had indeed gone softly molten or merely seemed

that way. His chair, the plastic panel under his fingers, all felt spongy and malleable. The lighting swooped crazily through all the hues of the spectrum. Somewhere a vast flood of undulating noise swooped with it. Kane hung on, blearily aware of a many-sided weirdness nearby that had to be Petrie—and that fearsome glob on the other side, Alvarez? The rest was eye-defeating instability, rippling colors, heaving noise, the twist and slip of shapes, the nauseating, never-ending fall, and the bone-aching everything-vibration that stirred itself into all things. He held on until his muscles felt stone-hard, his tendons like piano wire. He thought of the women—he couldn't ask them to stand much more of it.

"Get us out!" he yelled, and his voice went away in a vast void, lost in the madness. "Get us out!" he screamed again, glaring in what he hoped was the right direction—he could see only senseless writhing shapes and colors. And then, almost painfully, the insanity collapsed in on itself, boiled furiously, and was gone. The real solid world clicked back into place. And the alarms brayed senselessly, immediately, catching him with his mouth open for another shout.

In the next second he had struck the Evade button hard. On the main screen an enemy ship loomed and slid away. Beyond it were more. Many more. The target scope was full of spots. He grunted as the ship heeled up and over, laying the weight on heavily.

"Pick one, Mr. Petrie," he rasped, "any one. Mr. Alvarez, keep 'em reloading, leave the rest to Dr. Kopal." He snatched a glance at the burly scientist. "You hit 'em, Dr. Kopal. I'll point us, you hit 'em!"

Petrie threw him a spot into the screen and he juggled his controls tensely, threw in the attack pattern, and grunted as the weight came on again. The spot grew large, became identifiable, separated into glowing globes, and *Aspire* shuddered as both sets of weapons let go. He buttoned again for evade, heard Alvarez yelling, "Reload! Reload!" as the ship heeled into a screaming turn.

"Pick another, Mr. Petrie," he forced the words through

his teeth as he took charge again and straightened out. Sweat dripped from Petrie's face as he selected out another spot and transferred it. Two spots?

"The upper one's one of ours, sir," the navigator muttered. "Don't hit that!"

"We won't. We're programmed, remember?" Kane made rough aim, gave it to the computer, and held on. Alvarez was howling, still, for reload. Then the clear came up, as the second enemy ballooned on the screen, heat beams needling at the Earth ship that lumbered to break away. Kane felt that reassuring double-thump as both turrets let go, tripped the computer for evade, and groaned as the ship reared straight up and over and straightened out. He froze at the sight of three snake ships all at once, all coming in from different angles. There wasn't a chance of evading that lot. Already their heaters were glowing, reaching out. He yelled to Welby desperately,

"Drop us out, out!"

The old man labored to move his leaden arms against the murderous weight of thrust. Kane saw the puffing vortices of the enemy attack. And then there came again that sickening drop, the stuttering, chattering vibration, the molten insanity, the writhing colors—but at least the muscle-cracking gee-load was off. He could move, after a fashion. And shout into the weirdness.

"Welby! Welby! Can you hear me? Can't you make some kind of adjustment now? Here and now? Do something—to fix it—now!"

There was a heaving, obscene stirring in the strange things over there, a kind of gargling scream that might have been words. The shattering vibration grew faster, faster, into an unbearable buzz, a scream—and it was gone. The relief was wonderful. Kane let out a shaky breath. If only the damnable noise would go away too. He gripped his chair arms, the panel in front, and it all felt reassuringly solid. That hideous noise, the sick-making colors began to fade too, little by little. The noise dwindled to a distant hiss like some seashore sound; the colors evened out and settled

into a yellowish green with a vagrant ripple in it, so much like seawater that he imagined he could feel the wetness of it on his skin. It was grotesque, but better, infinitely better, than what had gone before. He said so.

"I can stand this, Welby, if you can, if this is all?"

A wildly improbable thing over there said, as if through a cavern, "I may be able to refine it a little more. It is almost stable." All at once Welby's face loomed up, ballooning enormously, hideously contorted, then just as suddenly dwindling away again into nothing, folding into some obscure corner to give place to Miss Kramer's staring face, all eyes and teeth and out of proportion. Then that, too, shrivelled away.

"Vision!" It came in a hollow growl that had to be Dr. Kopal's voice. "The higher frequencies are affected."

"Yes." Welby's distant voice agreed. "Materially we are substantial, but sound and vision—distortion—I will try—" Whatever he intended to try lost itself in soundless distance. Kane shut his eyes tight and realized that, apart from crazy noise effects, everything was reasonably familiar this way. He grooved for the general address button, moved it, spoke into the microphone.

"Hear this!" It was like shouting down a chimney. "Stations report. Any damage, anyone hurt? Power deck?" He waited, was about to call again when a growling roar came in which he could barely make out the words.

"Pile—is—fluxing. Crazy. Out—of—control—"

"Higher frequencies!" Kopal bellowed, and got a maddeningly incomprehensible something from Welby in reply. The lights dimmed, went away down to a sullen blood-red glow that barely penetrated Kane's eyelids.

"That should be better." Welby's voice seemed to be right in Kane's ear now. As he opened his eyes, the control room had contracted to a mere box, overcrowded with gigantic people and toylike instruments. He clamped his eyes shut once more. Again his remaining senses gave him normality.

"I've had dreams like this," he thought, "only this is no

dream." He put some of his spurious confidence into his voice as he tried the intercom.

"Power deck. Howie? How is it now?"

Harmer's reply was ragged-edged with distortion, but confident in content. "She's some better, Kenny. The flux is still throwing about, but not so wild. She'll hold, maybe. What in time is going on up there?"

"I'll let you know that just as soon as somebody tells me. Hold on. Stations, check. A tube? Let's hear from you."

After an agonizing interval there came a clear feminine voice. "Am I doing this right? Can you hear me?"

Kane used his memory, came up with the name. "That's Miss Bruno? Yes, I can hear you. How is it?"

"All well, I think. The men, they are sick, but it is just vertigo, not injury. The instability and queerness, it affects them."

"But not you, by the sound."

"Not very much, no. I do not like the color, however. It is an ugly red, I think. Am I talking too much?"

"Enough, thank you. B tube?"

Again the wait, then a click, and Laura Egan's richly velvet tones—by some oddity sounding intimately inside his ear. "I guess it's the same here, too, commander. Something about this here rubbery texture of everything seems to upset everyone but me. I can't see anything out of line otherwise."

"Power deck here," Harmer cut in, and now Kane could understand why his voice was ragged. "That's the picture here, too, Kenny. There's only me; Miss Yaddy and Miss Rosegger holding up, and I'm none too happy."

Kane became aware of distressed heavings on either side of his chair. "Hear this!" he declared firmly. "All male hands, hear this. Shut your eyes. Tight! That's an order. The nauseating effect is mostly visual. Shut your eyes, and keep 'em shut unless you have positive reason to look at something. I am now going to ask Dr. Welby to come in and talk a little. Welby?"

Another delay, and then it was Miss Kramer's voice which

broke in. "Our present state appears to be reasonably stable. This is Hannah Kramer on behalf of Dr. Welby, who also seems to be affected by the visual distortions. I repeat, we appear to have achieved a reasonably stable pseudouniverse of our own. I may be able to refine it a little more. I will try that first. Then, all being well, I will try to establish vector relationships and achieve some kind of workable data for operations. There may be a few minor alterations, a few more changes. Please do not be alarmed."

"That's easy to say," Kane thought, irritated by her calm. "Easy for you, maybe." He sneaked a slit-eye glance, saw huge-headed things wobbling on either side of him, grotesque clown-heads, saw his own hands miles away down there at a doll-sized panel. He squinted forward and was eyeball to eyeball with Miss Kramer, with Kopal's enormous head swelling over her shoulder. He clamped his eyes shut again.

"Go ahead, Miss Kramer," he advised, keeping his voice as steady as he could. "We could use some improvements."

He used his fingers to check his controls, and scowled to himself. So far as he could tell—and he knew the console well enough—all the computer buttons were up. Alarms and detectors too. And the drive throttles, the steering, the whole board, was on zero. "So where in hell," he wondered, "are we getting this one-gee thrust from? Pseudogravity?" A shrill, just-audible screech made him cringe, lasted only a moment, went away. A white glare beat against his eyelids, faded slowly. Queasily, the entire structure of his chair, his panel, even his body, seemed to soften, and slip, and then that was gone, too. Miss Kramer spoke again, and he barely knew her voice, it was so deep and brown.

"Be my guinea pig, commander. Try your visual reactions now."

Kane eased his eyes open a slit, then wide. The red had modulated to a shimmering pearl-pink, not unpleasant. The control room seemed its regular and normal shape and size. He looked around cautiously, blinked, stared at her.

"I can see you," he said, in a sonorous bass growl, "quite normally. Pink, but otherwise normal. Other things, too. But

I'm getting a fringe, a halo of dots and lines all around, peripheral vision. Like a badly tuned signal."

"Yes. I get that, too. I'm not sure—am I still talking on that circuit? Yes? Would everybody please try the visual effect, now, and report?"

Kane sat back, foolishly trying to catch a straight look at that fringe flicker. The reports came in, all confirming, all sounding a lot more cheerful. Then Welby, managing to smile, put up a hand for attention.

"May I say something, commander?"

"Go ahead. You're the expert."

"A much-abused term, I fear. I think this is as stable and normal as we can hope for, ladies and gentlemen. One hundred percent stability is neither to be expected nor desirable. In fact, it could be unwise. At this moment our pseudouniverse is in intermittent, moment-by-moment contact with the real universe on a number of parameters. We are, one might say, in a compromising state, neither here nor there entirely. In theory it should be possible to refine our universe to the degree that it becomes complete, in which case we would be completely out of contact with the real universe altogether. That is theory. In fact we do not have anything like the energy that would be needed for such a shift, even if we wanted to. At this moment we are expending virtually no energy at all. Our initial investment is maintaining our state with only fractional loss. I think we have achieved our first objective."

"You're reasonably sure that we are stable?" Kane demanded. "It'll be safe to move about, change positions, that kind of thing?"

"Oh yes. Our little universe is quite self-contained now."

"All right. Don't change anything for a while. All hands, stand-down for fifteen minutes!"

He switched out and rose cautiously, moved away from his chair to the hatchway. There was still a lingering sense of unreality, a dreamy, syrupy texture to everything. That same sleepwalking sense pervaded the messroom as everyone gathered there, staring at each other, passing hushed

whispers and coffee bulbs, and uneasily shifting about. Kane was aware of an unreal and aloof sense of abnormal mental clarity, a pinpoint attention that seemed to have no relationship to himself at all. It was obvious, now, that the women were much more able to take this phantomlike state than were the men. In no time at all, the five of them were in a huddle, giggling and gesturing, comparing impressions, whereas the men all looked acutely uncomfortable. Harmer came up to Kane and put the whole thing into simple words.

"I don't like this, Kenny, not one bit. One breath I feel like a ghost-man, not quite dead—the next I'm all knotted up inside, waiting for something to blow up!"

"I'm getting that too," Kane agreed softly. "Apprehension. Impending doom. It's spooky. Welby's gift to interplanetary war, but I'd just as soon do it the hard way. Mr. Petrie"—as the navigator joined them—"did you see whether or not we hit anything, back there?"

"Scored on both targets. Checked with Jaime on that. Something else, sir. I've had time to count up the traces we logged. I make it twenty-four or five of theirs and about ten of ours. That must be a hell of a battle going on back there, wherever. We ought to be in there, helping out!"

"I know. But we have to let Welby have his run. Like it or not, if he can get this trick off smooth so that we can drop in and out of reality to order, he may have something useful."

"I fear not." Kopal had come up just in time to hear Kane. "It will not be like that, commander. Edgar has overlooked a few factors, I think."

"Such as what?"

"Assume, now, that we revert to real space time, in a contact with the enemy. We fire—what? Two torpedoes, two corrodors? And then switch back to here? No, commander. We will have lost mass, and our overall mass configuration will be different. A different universe!"

"What? You mean we'd have to go through all that nightmare again? Retune the whole shoot every time?"

"Exactly. Each time it will be an entirely new cosmos!"

Kane felt savage. By the time he got back to his chair, ready for the next stage, he was patient but grim. To Welby he said, "Now what?"

"Communications, I think. References. Please activate your screens, detectors, sensors."

The results were not encouraging. The main screen forward glowed into a swirling, greenish craziness of moiré fringes. The astern screen was similar, but blue-violet. The radar screens were Petrie's and he slid the result on to Kane's scope for his opinion. Against the graticule there was a mess of white spits and saw-edged streaks. Welby looked unruffled.

"Now we must discriminate," he said. "We must sort out the frequencies and identify them. Patience!"

After what seemed an age, but was only a few minutes, the snow grew less, eventually was gone, and the screens showed a mass of pinpoints of varying brightness steadily wheeling past. Kane eyed the display.

"If this is anything," he declared, "we are spinning like a top!"

"Or the real universe is spinning around us," Welby retorted. "A little more, my dear. Reduce that mode by two kilohms—better—hold that."

The swirl had stopped. Real or not, Kane was impressed. It was as if the ship raced at great speed through a swarm of circular rainbows, some small, some like huge soap bubbles. And there was a one-to-one correspondence between those bubbles and the spots on the target scope.

"It looks like something," he admitted. "What now? Can I do anything, like maneuvering or adjusting attitudes?"

"That is something we will have to discover now. Be very careful, please, in whatever you do."

"All right," Kane declared, with a confidence he was far from feeling. "I'm going to treat this visual stuff as data, and do what would be necessary, first to stabilize our spin, then to check our forward motion. Here we go!" For this he cancelled the computer program, and took careful grasp on the controls, blinking the sudden sweat out of his eyes.

Easy, easy, he urged himself, as he touched the steering, levers and throttle barely moving, against the apparent spin. The entire ship bucked solidly, jarred as if battering through stone walls. The star-spots and images leaped and fled in crazy directions, hurtling across the screens like tracer fire. Kane let go the controls hastily, drew a deep breath. Belatedly it occurred to him to wonder where the jet mass would go to. And then he saw that the lighting had again modulated into angry blood-red dimness. That seemed to confirm it. He stared at Welby.

"Now we know," he growled. "Don't we? We are up a tree, or down a hole, whichever way you prefer it. We are stuck. Aren't we, Welby?"

XIV

THE OLD MAN looked unhappy. "I'm afraid, commander, that you are in a sense right." He touched his array of controls. "I cannot remake fine adjustments rapidly enough to maintain our stability. The procedure is complex. Of course, this is merely a crude prototype."

Kane began to simmer, biting back on words that were not fit to hear. Then an idea stabbed through his anger. "Just a minute. Continuous variables? Immediate adjustments? Can the computer handle that? Can you program it?"

"Dear me!" Welby's face opened foolishly in wonder. He stared down at his instruments as if seeing them anew. "I hadn't thought— It may be. I don't know. Bernard, you're more familiar than I am, what d'you think?"

Kopal heaved up. "How many variables?" He lumbered across to peer over Welby's shoulder. Miss Kramer got into it. Kane waited impatiently as they muttered. Kopal swung around.

"It will possibly load all the channels, commander. No capacity for your maneuver programs. Is that all right?"

"So long as you don't touch the life systems and sensor alarms."

"It will not involve those. They are simple yes-no loops. But it will take everything else. All the modules."

"Go ahead. I can fly this thing by hand if necessary. How long?"

"Only a few minutes. It is all in standard bits."

Kane sat still. At his back the computer chattered and chuckled as the savants modified its instructions. He felt uncomfortably superfluous, a layman in his own ship, with the damned civilians in charge. Then he had one more twitch of inspiration, and touched the intercom switch. "Power deck. Howie?"

"I hear you, Kenny. What now? We run into more rocks?"

"Just a thought. This make-believe universe we're in, it has to be small, right? So maybe we are using too damn much power. Want you to pull out one booster stage, cut everything by a factor of ten. Can do?"

"Sounds crazy, but no trouble. Be a minute. I'll come back." He was back well within the time. "You got it, Kenny. Hope it works."

Kopal straightened up, lumbered back to his desk and sat. Welby put up a schoolmasterlike finger. "I think we are ready, commander. Would you try again, carefully, please?"

Kane wiped his sweaty palms, flicked a glance at the screens, then concentrated on his target scope as being the easiest to work with. He caressed the steering, barely leaning on it, and the ship buck-jumped once more, but not nearly so violently. The target spots jerked, spun away, halted, and he nudged again, beginning to establish a kind of feel for it. "Use your eyes, Mr. Petrie," he muttered. "Let me know if and when you see anything in the least familiar."

"I sure could use the comp's reference banks now. There's a million of 'em. Hold it there! No, damn it, I thought—wait. Wait!"

Kane sweated to hold the images stable, not daring to look away.

"That— It looks like the Pleiades—I'll swear!"

"You better be right, mister. Which way now?"

"Right a bit. Just a touch. Touch more." Petrie stared fervently at his screen. "That looks like—it is! Streaming Saturn, that is Aldebaran! Wow! We move! Oh, brother, how we move!"

"What now?" Kane snarled. "Point us somewhere near Capella!"

"Trying to remember. Down. Down a bit more. More. Hold that. It could be El Nath. Down and left. Left. Hold it!" The star-points jittered and both men cursed fervently. Petrie shook sweat from the end of his nose. "That looks like the Auriga pattern. If it is, that's Capella, right there!"

"You better be right," Kane repeated, then looked across to Welby. "I'm going to try forward drive now, Dr. Welby. So far all I've done is to alter our point. Our attitude. Any comment?"

"Only to repeat the need for caution, commander. It will strain the resources of our computer if we change too much too fast."

"Any way of telling how far away we are from anything?"

"I'm afraid not. That is a refinement we have yet to make."

"Thanks a lot!" Kane scrubbed his palms again over his thighs, took hold, and eased on the main drive. The ship squealed and objected like a rusty nail being dragged out of old wood, but the jittering star-images held fairly steady and spread out very fast. Too fast. He switched to braking-thrust, and as his hands took up the tolerance the entire nightmare leaped savagely, fell, roared an immense brazen-throated roar, and black darkness smothered everything. He drew breath to shout in terror, and a scabrous green glare flooded his vision, seeming to leak in from somewhere outside. The ship's lights came back, red and hideous against the green, creating a swirling fog of wavering images. He let out that breath, took in another; but before he could do anything with it, he saw the image in the forward

screen and froze speechless. The others saw it, were just as paralyzed as he was.

It stretched enormously, filling the whole of the center of the screen. It was vast, fronded, semitransparent, jelly-like—and alive. Obscene green, its fat bloated body sprouting a myriad of trailing extremities, a forest of limbs all twisting and searching with purposive energy. With it came that nerve-scraping sense of utter evil that he knew from encounter with the snake ships, but ten times more intense. Those long, snakelike limbs curled and waved in sinuous search against a black backdrop of bright star-points, and there was no way of knowing just what it was—whether it was no more than something plantlike under a microscope, or something so vast as to be unthinkable.

Kane swallowed, swallowed again against the heaving of his stomach, his eye settling on one nearby limb, following its writhing length, seeing that it ended in a five-spread of tubular tentacles. He checked another, and it was the same. In queasy horror he watched another one reach out, and out—and then disappear as if probing through some invisible curtain. Thousands of those searching arms, some threadlike with distance, others like enormous rubbery trunks squirming across the screen. He knew what this was. However insane, he *knew*! The knowledge snapped him out of horror into grim purpose. He cleared his throat a time or two, reached for the intercom.

"Battle stations!" he snapped, his voice seeming to snap the others out of their stupor. "All weapons ready to fire and standby to reload." He turned to Alvarez, who was staring-eyed and sleek with sweat. "Point-blank range, mister, and keep right on with it. Dr. Kopal, we won't need your gadget for this. I can aim at that thing with my eyes shut. Power deck! Cancel that cut-out, make full power available as fast as possible. Fire when ready, mister."

"No!" Welby called. "This is madness! To discharge missiles—"

"All hands—and you, Dr. Welby—that thing you see on the screen is the enemy—is the snakes! Take a good look

at the extremities of the limbs. Mister Alvarez, what the hell are you waiting for?"

He felt the first double-thump of discharge, saw the lights wink out. Torpedoes away. Again, and this time it was the corrodors. And wait through the nerve-scratching time for reload. Again the weapons let go. Three of those monster arms started to curl inquisitively in their direction, and he saw now just how vast they were. Where the hell were the missiles? The double-thump came again, commendably quickly. They must be working like crazy men in the turrets. But where were the impacts? Surely there couldn't be misses, on a thing that size. Another salvo went away—and then he saw, through streaming sweat, a faint pinprick of light against the obscene green. And another. The faint points swelled into incandescence, into twin stars, to be joined by two more. So small were they that Kane's mind boggled at the implication. But now the reaching, threatening arms began to curl back, the vast jelly-green mass was boiling, darkening to a blotched blue.

Torpedo flares came again in close pairs. And now the boiling blue began to show gray patches of scale, of decay. The corrodors! Kane stared, too fascinated to be afraid. Beside him, Alvarez gasped, all at once,

"It's a whole planet! Madre Mia, a whole planet!"

And so it was. The weapons kept on thumping, and before their eyes the entire jelly-mass was breaking apart, squirming into lumps that quivered and shook into gray decay and death, the long ropy limbs drawing in, contracting, collapsing and dying as they stared. Here and there, in growing areas, they saw dark red solidity, the stark surface of a dead planet. It reminded Kane of the surface of Mars, a red-ochre expanse of aridity and pockmarks. The green stuff was almost all gone now, just a gray dead scum left where it had been. Kane became aware that Welby was calling to him.

"Stop firing! Stop it! We have used up all our tolerance! If we discharge any more mass we will lose stability!"

"I think not, Dr. Welby," he retorted, with a calmness

that surprised himself. "Cease fire, Mr. Alvarez. I think it's dead now. Dr. Welby, our stability is in no danger. You don't seem to have caught on. We are not in any pseudouniverse now. That thing out there is real. It may not be *our* universe, but it's a real one, no doubt about that." He looked back to the screen, to where there was no longer any green horror, but just a gray sludge-mass of death and corruption against the stark bones of a dead planet. "That seems to be it," he said, weary but satisfied. "No more snakes."

"Just by itself, that makes everything worth while," Petrie sighed, "but what do we do now?"

Kane looked across to where Welby had his head in his hands, to where Miss Kramer looked back at him in a blank uncomprehending stare. "Get us out, Miss Kramer," he ordered. "Throw your switches, or whatever it is you do."

"It won't work," she mumbled. "It's all gone wrong!"

He glared at her, opened his mouth to roar, thought better of it, touched the intercom switch. "Power deck. Howie? Remember those two switches that started all this? Pull them out now, we don't need them anymore."

Seconds later the entire incredible scene snuffed out like a blown candle. All was darkness, a darkness full of strain and stress, of wrenching into agony and sudden vertigo, breathlessness and more strain. Kane fought for breath, struggled, went blind, knew fear—and then there was a faint light, a grayness, a great rushing together of senses into a sudden, soundless implosion. He blinked in the garish lights of the control room, heard the click and murmur of old familiar sounds starting up.

"We made it!" Petrie yelled. "We made it! Look, there's the old bloody red monster itself, over there!" and he hurled his cap at the screen where the huge red-orange disc of Capella flared against velvet bejewelled with familiar star patterns.

"All right, mister, cool it. We're home. Get me a fix on base H.Q. and try to raise them on the radio link."

"Shouldn't we have sensors out, sir?"

"Not any more, Mr. Alvarez. We aren't going to need them, now."

Some five and a half hours later Kane was in the awesome company of the three men who, between them, ran the whole of Earth's war effort. He saw more brass now than he had ever seen at one time in one place before, yet, to his surprise, these were mild-mannered men, and good listeners. Welby and Miss Kramer were present too, but the warlords, seemingly, wanted him to do the talking for all.

"I can't fill in the technicalities," he admitted. "I'm giving it to you the way it came across to me."

"That is good enough, commander," High Admiral Leonov assured him. "Technicalities paralyze the brain cells. What we want from gadgets is that they work. The how can be left to others."

"I'll go along with that," High Admiral Mackie endorsed. "I was never so pleased to see anything as the way you dropped out of nowhere and burst that snake who was on my tail. He had me cold. You say you make a hole in the continuum and go through it?"

"Something like that. Dr. Welby has a different version, but that's what we actually did. Instead of maintaining our own pseudouniverse, we somehow matched characteristics with another actual one and fell into it. And the mother snake was there."

High Admiral Grey shook his head. "That's the bit I don't grasp. You say this thing was somehow able to poke its fingers through the—whatever—and grab at us, and that's what we thought were ships?"

"I know there are a thousand things to explain," Kane sighed, "and we may never get answers to all of them. But that is the only answer that fits all the facts as we know them. There was never any debris, for one thing. No signs of drive mechanism. All the 'ships' were identical, always. The corrosive darts, for another. And that awful alien feeling of evil, every time."

"That last item," Leonov nodded vigorously, "is, for me, something. Reports are still coming in from the whole fleet

that everyone feels so much more cheerful, happy, now. I think I will buy this story, gentlemen. It is fantastic, but it feels right."

"You've ended the war for us, Kane," Grey smiled crookedly. "Made me obsolete, just for one—and I don't mind that a bit. You're a hero, man! Ask for it, whatever, and you'll get it. Nothing's too good."

"That's not the way, sir," Kane shook his head. "Not for me, anyway. There were a lot of other people involved. They deserve credit too. As for a reward, that's up to them. All I want is the chance to find a place of my own and settle down. That won't suit everybody, I know. There'll always be those who itch to push back the frontiers a bit more—good luck to them—but I've had my bit. I'll settle for a nice quiet corner and my own back yard to tend. I've had all I want of giving orders to other people."

"You learn that, so soon?" Leonov grinned. "We have had it for many years, but no more, now. Now we can really go looking for new places, fine places to live. With your new pseudodrive, Dr. Welby, it will be easier. But we will need skilled men, men with resource, with courage, men to lead. What will it take to change your mind, Commander Kane? We are going to need men just like you."

"And women, too," Kane pointed out. "Women seem to stand that weird pseudozone business better than men."

"You see? Already you know more than we do. Come now, would you not like your pick of a crew, and a ship—a whole fleet?"

"Let's not start that again!" Kane objected, but he was halfway sold as soon as he thought about it.

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