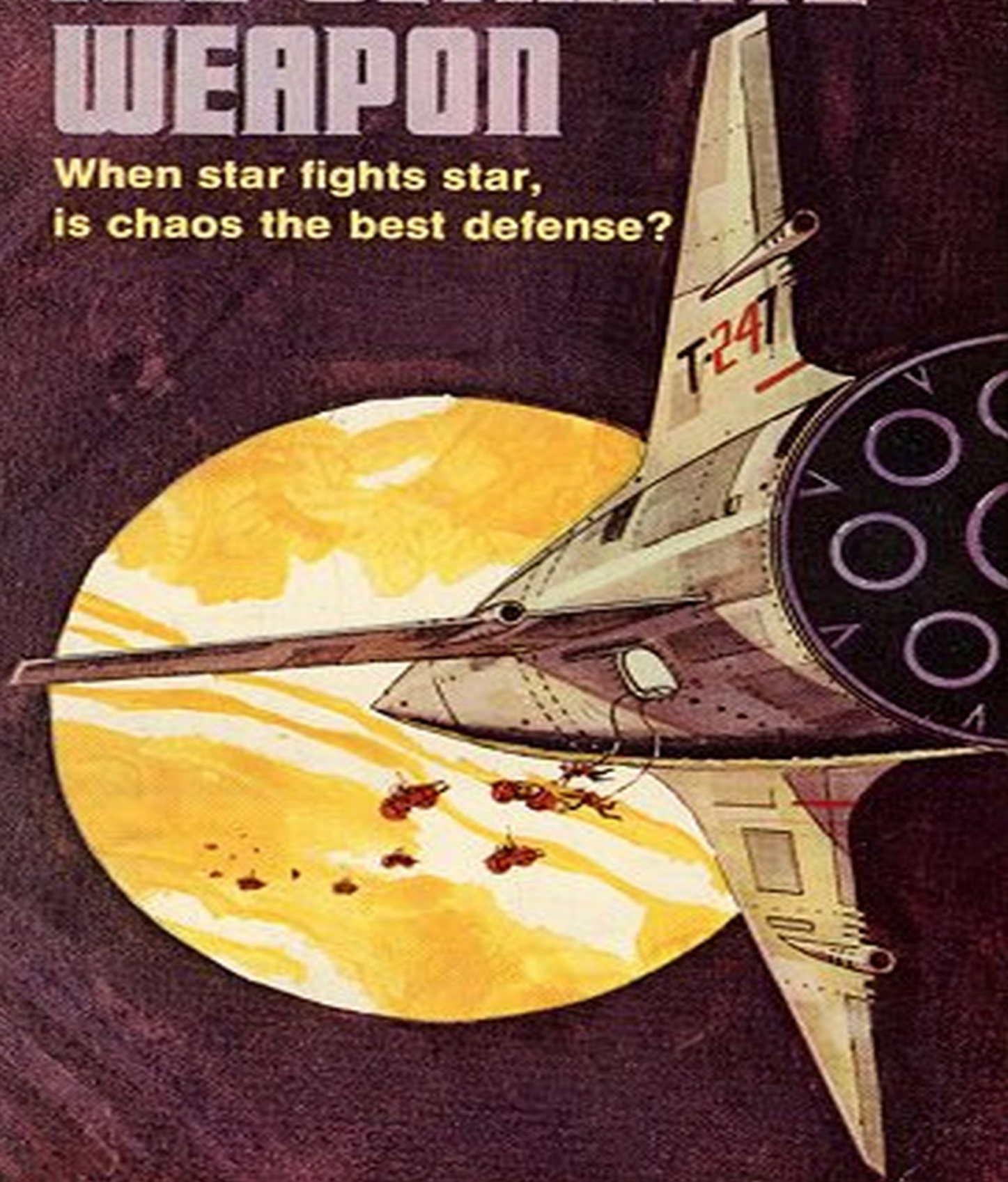


JOHN W. CAMPBELL THE ULTIMATE WEAPON

When star fights star,
is chaos the best defense?



THE ULTIMATE WEAPON

by
JOHN W. CAMPBELL

Cover by Gerald McConnell

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INTRODUCTION: RED SUN RISING

The star Mira was unpredictably variable. Sometimes it was blazing, brilliant and hot. Other times it was oddly dim, cool, shedding little warmth on its many planets. Gresth Gkae, leader of the Mirans, was seeking a better star, one to which his "people" could migrate. That star had to be steady, reliable, with a good planetary system. And in his astronomical searching, he found Sol.

With hundreds of ships, each larger than whole Terrestrial spaceports, and traveling faster than the speed of light, the Mirans set out to move in to Solar regions and take over.

And on Earth there was nothing which would be capable of beating off this incredible armada—until Buck Kendall stumbled upon THE ULTIMATE WEAPON.

JOHN W. CAMPBELL first started writing in 1930 when his first short story, *When the Atoms Failed*, was accepted by a science-fiction magazine. At that time he was twenty years old and still a student at college. As the title of the story indicates, he was even at that time occupied with the significance of atomic energy and nuclear physics.

For the next seven years, Campbell, bolstered by a scientific background that ran from childhood experiments, to study at Duke University and the Massachusetts Institute of Technology, wrote and sold science-fiction, achieving for himself an enviable reputation in the field.

In 1937 he became the editor of *Astounding Stories* magazine and applied himself at once to the task of bettering the magazine and the field of s-f writing in general. His influence on science-fiction since then has been great. Today he still remains as the editor of that magazine's evolved and

redesigned successor, *Analog*.



I

Patrol Cruiser "IP-T 247" circling out toward Pluto on leisurely inspection tour to visit the outpost miners there, was in no hurry at all as she loafed along. Her six-man crew was taking it very easy, and easy meant two-man watches, and low speed, to watch for the instrument panel and attend ship into the bargain.

She was about thirty million miles off Pluto, just beginning to get in touch with some of the larger mining stations out there, when Buck Kendall's turn at the controls came along. Buck Kendall was one of life's little jokes. When Nature made him, she was absentminded. Buck stood six feet two in his stocking feet, with his usual slight stoop in operation. When he forgot, and stood up straight, he loomed about two inches higher. He had the body and muscles of a dock navvy, which Nature started out to make. Then she forgot and added something of the same stuff she put in Sir Francis Drake. Maybe that made Old Nature nervous, and she started adding different things. At any rate, Kendall, as finally turned out, had a brain that put him in the first rank of scientists—when he felt like it—the general constitution of an ostrich and a flair for gambling.

The present position was due to such a gamble. An IP man, a friend of his, had made the mistake of betting him a thousand dollars he wouldn't get beyond a Captain's bars in the Patrol. Kendall had liked the idea anyway, and adding a bit of a bet to it made it irresistible. So, being a very particular kind of a fool, the glorious kind which old Nature turns out now and then, he left a

five million dollar estate on Long Island, Terra, that same evening, and joined up in the Patrol. The Sir Francis Drake strain had immediately come forth—and Kendall was having the time of his life. In a six-man cruiser, his real work in the Interplanetary Patrol had started. He was still in it—but it was his command now, and a blue circle on his left sleeve gave his lieutenant's rank.

Buck Kendall had immediately proceeded to enlist in his command the IP man who had made the mistaken bet, and Rad Cole was on duty with him now. Cole was the technician of the T-247. His rank as Technical Engineer was practically equivalent to Kendall's circle-rank, which made the two more comfortable together.

Cole was listening carefully to the signals coming through from Pluto. "That," he decided, "sounds like Tad Nichols' fist. You can recognize that broken-down truck-horse trot of his on the key as far away as you can hear it."

"Is that what it is?" sighed Buck. "I thought it was static mushing him at first. What's he like?"

"Like all the other damn fools who come out two billion miles to scratch rock, as if there weren't enough already on the inner planets. He's got a rich platinum property. Sells ninety percent of his output to buy his power, and the other eleven percent for his clothes and food."

"He must be an efficient miner," suggested Kendall, "to maintain 101% production like that."

"No, but his bank account is. He's figured out that's the most economic level of production. If he produces less, he won't be able to pay for his heating power, and if he produces more, his operation power will burn up his bank account too fast."

"Hmmm—sensible way to figure. A man after my own heart. How does he plan to restock his bank account?"

"By mining on Mercury. He does it regularly—sort of a commuter. Out here his power bills eat it up. On Mercury he goes in for potassium, and sells the power he collects in cooling his dome, of course. He's a good miner, and the old fool can make money down there." Like any really skilled operator, Cole had been sending Morse messages while he talked. Now he sat quiet waiting

for the reply, glancing at the chronometer.

"I take it he's not after money—just after fun," suggested Buck.

"Oh, no. He's after money," replied Cole gravely. "You ask him—he's going to make his eternal fortune yet by striking a real bed of jovium, and then he'll retire."

"Oh, one of that kind."

"They all are," Cole laughed. "Eternal hope, and the rest of it." He listened a moment and went on. "But old Nichols is a first-grade engineer. He wouldn't be able to remake that bankroll every time if he wasn't. You'll see his Dome out there on Pluto—it's always the best on the planet. Tip-top shape. And he's a bit of an experimenter too. Ah—he's with us."

Nichols' ragged signals were coming through—or pounding through. They were worse than usual, and at first Kendall and Cole couldn't make them out. Then finally they got them in bursts. The man was excited, and his bad key-work made it worse. "—Randing stopped. They got him I think. He said—th—ship as big—a—nsport. Said it wa—eaded my—ay. Neutrons—on instruments—he's coming over the horizon—it's huge—war ship I think—register—instru—neutrons—." Abruptly the signals were blanked out completely.

Cole and Kendall sat frozen and stiff. Each looked at the other abruptly, then Kendall moved. From the receiver, he ripped out the recording coil, and instantly jammed it into the analyzer. He started it through once, then again, then again, at different tone settings, till he found a very shrill whine that seemed to clear up most of Nichols' bad key-work. "T-247—T-247—Emergency. Emergency. Randing reports the—over his horizon. Huge—ip—reign manufacture. Almost spherical. Randing's stopped. They got him I think. He said the ship was as big as a transport. Said it was headed my way. Neutrons—ont—gister—instruments. I think—is h—he's coming over the horizon. It's huge, and a war ship I think—register—instruments—neutrons."

Kendall's finger stabbed out at a button. Instantly the noise of the other men, wakened abruptly by the mild shocks, came from behind. Kendall swung to the controls, and Cole raced back to the engine room. The hundred-foot ship shot suddenly forward under the thrust of her tail ion-rockets. A blue-red

cloud formed slowly behind her and expanded. Talbot appeared, and silently took her over from Kendall. "Stations, men," snapped Kendall. "Emergency call from a miner of Pluto reporting a large armed vessel which attacked them." Kendall swung back, and eased himself against the thrusting acceleration of the over-powered little ship, toward the engine room. Cole was bending over his apparatus, making careful check-ups, closing weapon-circuits. No window gave view of space here; on the left was the tiny tender's pocket, on the right, above and below the great water tanks that fed the ion-rockets, behind the rockets themselves. The tungsten metal walls were cold and gray under the ship lights; the hunched bulks of the apparatus crowded the tiny room. Gigantic racked accumulators huddled in the corners. Martin and Garnet swung into position in the fighting-tanks just ahead of the power rooms; Canning slid rapidly through the engine room, oozed through a tiny door, and took up his position in the stern-chamber, seated half-over the great ion-rocket sheath.

"Ready in positions, Captain Kendall," called the war-pilot as the little green lights appeared on his board.

"Test discharges on maximum," ordered Kendall. He turned to Cole. "You start the automatic key?"

"Right, Captain."

"All shipshape?"

"Right as can be. Accumulators at thirty-seven per cent, thanks to the loaf out here. They ought to pick up our signal back on Jupiter, he's nearest now. The station on Europa will get it."

"Talbot—we are only to investigate if the ship is as reported. Have you seen any signs of her?"

"No sir, and the signals are blank."

"I'll work from here." Kendall took his position at the commanding control. Cole made way for him, and moved to the power board. One by one he tested the automatic doors, the pressure bulkheads. Kendall watched the instruments as one after another of the weapons were tested on momentary full discharge—titanic flames of five million volt protons. Then the ship thudded to the chatter of the Garnell rifles.

Tensely the men watched the planet ahead, white, yet barely visible in the weak sunlight so far out. It was swimming slowly nearer as the tiny ship gathered speed.

Kendall cast a glance over his detector-instruments. The radio network was undisturbed, the magnetic and electric fields recognized only the slight disturbances occasioned by the planet itself. There was nothing, noth—

Five hundred miles away, a gigantic ship came into instantaneous being. Simultaneously, and instantaneously, the various detector systems howled their warnings. Kendall gasped as the thing appeared on his view screen, with the scale-lines below. The scale must be cock-eyed. They said the ship was fifteen hundred feet in diameter, and two thousand long!

"Retreat," ordered Kendall, "at maximum acceleration."

Talbot was already acting. The gyroscopes hummed in their castings, and the motors creaked. The T-247 spun on her axis, and abruptly the acceleration built up as the ion-rockets began to shudder. A faint smell of "heat" began to creep out of the converter. Immense "weight" built up, and pressed the men into their specially designed seats—

The gigantic ship across the way turned slowly, and seemed to stare at the T-247. Then it darted toward them at incredible speed till the poor little T-247 seemed to be standing still, as sailors say. The stranger was so gigantic now, the screens could not show all of him.

"God, Buck—he's going to take us!"

Simultaneously, the T-247 rolled, and from her broke every possible stream of destruction. The ion-rocket flames swirled abruptly toward her, the proton-guns whined their song of death in their housings, and the heavy pounding shudder of the Garnell guns racked the ship.

Strangely, Kendall suddenly noticed, there was a stillness in the ship. The guns and the rays were still going—but the little human sounds seemed abruptly gone.

"Talbot—Garnet—" Only silence answered him. Cole looked across at him in sudden white-faced amazement.

"They're gone—" gasped Cole.

Kendall stood paralyzed for thirty seconds. Then suddenly he seemed to come to life. "Neutrons! Neutrons—and water tanks! Old Nichols was right —" He turned to his friend. "Cole—the tender—quick." He darted a glance at the screen. The giant ship still lay alongside. A wash of ions was curling around her, splitting, and passing on. The pinprick explosions of the Garnell shells dotted space around her—but never on her.

Cole was already racing for the tender lock. In an instant Kendall piled in after him. The tiny ship, scarcely ten feet long, was powered for flights of only two hours acceleration, and had oxygen for but twenty-four hours for six men, seventy-two hours for two men—maybe. The heavy door was slammed shut behind them, as Cole seated himself at the panel. He depressed a lever, and a sudden smooth push shot them away from the T-247.

"DON'T!" called Kendall sharply as Cole reached for the ion-rocket control. "Douse those lights!" The ship was dark in dark space. The lighted hull of the T-247 drifted away from the little tender—further and further till the giant ship on the far side became visible.

"Not a light—not a sign of fields in operation." Kendall said, unconsciously speaking softly. "This thing is so tiny, that it may escape their observation in the fields of the T-247 and Pluto down there. It's our only hope."

"What happened? How in the name of the planets did they kill those men without a sound, without a flash, and without even warning us, or injuring us?"

"Neutrons—don't you see?"

"Frankly, I don't. I'm no scientist—merely a technician. Neutrons aren't used in any process I've run across."

"Well, remember they're uncharged, tiny things. Small as protons, but without electric field. The result is they pass right through an ordinary atom without being stopped unless they make a direct hit. Tungsten, while it has a beautifully high melting point, is mostly open space, and a neutron just sails right through it, or any heavy atom. Light atoms stop neutrons better—there's less open space in 'em. Hydrogen is best. Well—a man is made up mostly of light elements, and a man stops those neutrons—it isn't surprising it killed those other fellows invisibly, and without a sound."

"You mean they bathed that ship in neutrons?"

"Shot it full of 'em. Just like our proton guns, only sending neutrons."

"Well, why weren't we killed too?"

"Water stops neutrons,' I said. Figure it out."

"The rocket-water tanks—all around us! Great masses of water—" gasped Cole. "That saved us?"

"Right. I wonder if they've spotted us."

The stranger ship was moving slowly in relation to the T-247. Suddenly the motion changed, the stranger spun—and a giant lock appeared in her side, opened. The T-247 began to move, floated more and more rapidly straight for the lock. Her various weapons had stopped operating now, the hoppers of the Garnell guns exhausted, the charge of the accumulators aboard the ship down so low the proton guns had died out.

"Lord—they're taking the whole ship!"

"Say—Cole, is that any ship you ever heard of before? *I don't think that's just a pirate!*"

"Not a pirate—what then?"

"How'd he get inside our detector screens so fast? Watch—he'll either leave, or come after us—" The T-247 had settled inside the lock now, and the great metal door closed after it. The whole patrol ship had been swallowed by a giant. Kendall was sketching swiftly on a notebook, watching the vast ship closely, putting down a record of its lines, and formation. He glanced up at it, and then down for a few more lines, and up at it—

The stranger ship abruptly dwindled. It dwindled with incredible speed, rushing off along the line of sight at an impossible velocity, and abruptly clicking out of sight, like an image on a movie-film that has been cut, and repaired after the scene that showed the final disappearance.

"Cole—Cole—did you get that? Did you see—do you understand what happened?" Kendall was excitedly shouting now.

"He missed us," Cole sighed. "It's a wonder—hanging out here in space, with the protector of the T-247's fields gone."

"No, no, you asteroid—that's not it. *He went off faster than light itself!*"

"Eh—what? Faster than *light*? That can't be done—"

"He did it, I know he did. That's how he got inside our screens. He came inside faster than the warning message could relay back the information. Didn't you see him accelerate to an impossible speed in an impossible time? Didn't you see how he just vanished as he exceeded the speed of light, and stopped reflecting it? *That ship was no ship of this solar system!*"

"Where did he come from then?"

"God only knows, but it's a long, long way off."

II

The IP-M-122 picked them up. The M-122 got out there two days later, in response to the calls the T-247 had sent out. As soon as she got within ten million miles of the little tender, she began getting Cole's signals, and within twelve hours had reached the tiny thing, located it, and picked it up.

Captain Jim Warren was in command, one of the old school commanders of the IP. He listened to Kendall's report, listened to Cole's tale—and radioed back a report of his own. Space pirates in a large ship had attacked the T-247, he said, and carried it away. He advised a close watch. On Pluto, his investigations disclosed nothing more than the fact that three mines had been raided, all platinum supplies taken, and the records and machinery removed.

The M-122 was a fifty-man patrol cruiser, and Warren felt sure he could handle the menace alone, and hung around for over two weeks looking for it. He saw nothing, and no further reports came of attack. Again and again, Kendall tried to convince him this ship he was hunting was no mere space pirate, and again and again Warren grunted, and went on his way. He would not send in any report Kendall made out, because to do so would add his endorsement to that report. He would not take Kendall back, though that was well within his authority.

In fact, it was a full month before Kendall again set foot on any of the Minor Planets, and then it was Mars, the base of the M-122. Kendall and Cole took passage immediately on an IP supply ship, and landed in New York six days later. At once, Kendall headed for Commander McLaurin's office. Buck Kendall, lieutenant of the IP, found he would have to make regular application to see McLaurin through a dozen intermediate officers.

By this time, Kendall was savagely determined to see McLaurin himself, and see him in the least possible time. Cole, too, was beginning to believe in

Kendall's assertion of the stranger ship's extra-systemic origin. As yet neither could understand the strange actions of the machine, its attack on the Pluto mines, and the capture and theft of a patrol ship.

"There is," said Kendall angrily, "just one way to see McLaurin and see him quick. And, by God, I'm going to. Will you resign with me, Cole? I'll see him within a week then, I'll bet."

For a minute, Cole hesitated. Then he shook hands with his friends. "Today!" And that day it was. They resigned, together. Immediately, Buck Kendall got the machinery in motion for an interview, working now from the outside, pulling the strings with the weight of a hundred million dollar fortune. Even the IP officers had to pay a bit of attention when Bernard Kendall, multi-millionaire began talking and demanding things. Within a week, Kendall *did* see McLaurin.

At that time, McLaurin was fifty-three years old, his crisp hair still black as space, with scarcely a touch of the gray that appears in his more recent photographs. He stood six feet tall, a broad-shouldered, powerful man, his face grave with lines of intelligence and character. There was also a permanent narrowing of the eyes, from years under the blazing sun of space. But most of all, while those years in space had narrowed and set his eyes, they had not narrowed and set his mind. An infinitely finer character than old Jim Warren, his experience in space had taught him always to expect the unexpected, to understand the incomprehensible as being part of the unknown and incalculable properties of space and the worlds that swam in it. Besides the fine technical education he had started with, he had acquired a liberal education in mankind. When Buck Kendall, straight and powerful, came into his office with Cole, he recognized in him a character that would drive steadily and straight for its goal. Also, he recognized behind the millionaire that had succeeded in pulling wires enough to see him, the scientist who had had more than one paper published "in an amateur way."

"Dr. Bernard Kendall?" he asked, rising.

"Yes, sir. Late Buck Kendall, lieutenant of the IP. I quit and got Cole here to quit with me, so we could see you."

"Unusual tactics. I've had several men join up to get an interview with me." McLaurin smiled.

"Yes, I can imagine that, but we had to see you in a hurry. A hidebound old rascal by the name of Jim Warren picked us up out by Pluto, floating around in a six-man tender. We made some reports to him, but he wouldn't believe, and he wouldn't send them through—so we had to send ourselves through. Sir, this system is about to be attacked by some extra-systemic race. The IP-T-247 was so attacked, her crew killed off, and the ship itself carried away."

"I got the report Captain Jim Warren sent through, stating it was a gang of space pirates. Now what makes you believe otherwise?"

"That ship that attacked us, attacked with a neutron gun, a gun that shot neutrons through the hull of our ship as easily as protons pass through open space. Those neutrons killed off four of the crew, and spared us only because we happened to be behind the water tanks. Masses of hydrogen will stop neutrons, so we lived, and escaped in the tender. The little tender, lightless, escaped their observation, and we were picked up. Now, when the 247 had been picked up, and locked into their ship, that ship started accelerating. It accelerated so fast along my line of sight that it just dwindled, and—vanished. It didn't vanish in distance, it vanished *because it exceeded the speed of light.*"

"Isn't that impossible?"

"Not at all. It can be done—if you can find some way of escaping from this space to do it. Now if you could cut across through a higher dimension, your *projection* in this dimension might easily exceed the speed of light. For instance, if I could cut directly through the Earth, at a speed of one thousand miles an hour, my projection on the surface would go twelve thousand miles while I was going eight. Similar, if you could cut *through* the four dimensional space instead of following its surface, you'd attain a speed greater than light."

"Might it not still be a space pirate? That's a lot easier to believe, even allowing your statement that he exceeded the speed of light."

"If you invented a neutron gun which could kill through tungsten walls without injuring anything within, a system of accelerating a ship that didn't affect the inhabitants of that ship, and a means of exceeding the speed of

light, all within a few months of each other, would you become a pirate? I wouldn't, and I don't think any one else would. A pirate is a man who seeks adventure and relief from work. Given a means of exceeding the speed of light, I'd get all the adventure I wanted investigating other planets. If I didn't have a cent before, I'd have relief from work by selling it for a few hundred millions—and I'd sell it mighty easily too, for an invention like that is worth an incalculable sum. Tie to that the value of compensated acceleration, and no man's going to turn pirate. He can make more millions selling his inventions than he can make thousands turning pirate with them. So who'd turn pirate?"

"Right." McLaurin nodded. "I see your point. Now before I'd accept your statements *in re* the 'speed of light' thing, I'd want opinions from some IP physicists."

"Then let's have a conference, because something's got to be done soon. I don't know why we haven't heard further from that fellow."

"Privately—we have," McLaurin said in a slightly worried tone. "He was detected by the instruments of every IP observatory I suspect. We got the reports but didn't know what to make of them. They indicated so many funny things, they were sent in as accidental misreadings of the instruments. But since *all* the observatories reported them, similar misreadings, at about the same times, that is with variations of only a few hours, we thought something must have been up. The only thing was the phenomena were reported progressively from Pluto to Neptune, clear across the solar system, in a definite progression, but at a velocity of crossing that didn't tie in with any conceivable force. They crossed faster than the velocity of light. That ship must have spent about half an hour off each planet before passing on to the next. And, accepting your faster-than-light explanation, we can understand it."

"Then I think you have proof."

"If we have, what would you do about it?"

"Get to work on those 'misreadings' of the instruments for one thing, and for a second, and more important, line every IP ship with paraffin blocks six inches thick."

"Paraffin—why?"

"The easiest form of hydrogen to get. You can't use solid hydrogen, because that melts too easily. Water can be turned into steam too easily, and requires more work. Paraffin is a solid that's largely hydrogen. That's what they've always used on neutrons since they discovered them. Confine your paraffin between tungsten walls, and you'll stop the secondary protons as well as the neutrons."

"Hmmm—I suppose so. How about seeing those physicists?"

"I'd like to see them today, sir. The sooner you get started on this work, the better it will be for the IP."

"Having seen me, will you join up in the IP again?" asked McLaurin.

"No, sir, I don't think I will. I have another field you know, in which I may be more useful. Cole here's a better technician than fighter—and a darned good fighter, too—and I think that an inexperienced space-captain is a lot less useful than a second-rate physicist at work in a laboratory. If we hope to get anywhere, or for that matter, I suspect, stay anywhere, we'll have to do a lot of research pretty promptly."

"What's your explanation of that ship?"

"One of two things: an inventor of some other system trying out his latest toy, or an expedition sent out by a planetary government for exploration. I favor the latter for two reasons: that ship was *big*. No inventor would build a thing that size, requiring a crew of several hundred men to try out his invention. A government would build just about that if they wanted to send out an expedition. If it were an inventor, he'd be interested in meeting other people, to see what they had in the way of science, and probably he'd want to do it in a peaceable way. That fellow wasn't interested in peace, by any means. So I think it's a government ship, and an unfriendly government. They sent that ship out either for scientific research, for trade research and exploration, or for acquisitive exploration. If they were out for scientific research, they'd proceed as would the inventor, to establish friendly communication. If they were out for trade, the same would apply. If they were out for acquisitive exploration, they'd investigate the planets, the sun, the people, only to the extent of learning how best to overcome them. They'd want to get a sample of

our people, and a sample of our weapons. They'd want samples of our machinery, our literature and our technology. That's exactly what that ship got.

"Somebody, somewhere out there in space, either doesn't like their home, or wants more home. They've been out looking for one. I'll bet they sent out hundreds of expeditions to thousands of nearby stars, gradually going further and further, seeking a planetary system. This is probably the one and only one they found. It's a good one too. It has planets at all temperatures, of all sizes. It is a fairly compact one, it has a stable sun that will last far longer than any race can hope to."

"Hmm—how can there be good and bad planetary systems?" asked McLaurin. "I'd never thought of that."

Kendall laughed. "Mighty easy. How'd you like to live on a planet of a Cepheid Variable? Pleasant situation, with the radiation flaring up and down. How'd you like to live on a planet of Antares? That blasted sun is so big, to have a comfortable planet you'd have to be at least ten billion miles out. Then if you had an interplanetary commerce, you'd have to struggle with orbits tens of billions of miles across instead of mere millions. Further, you'd have a sun so blasted big, it would take an impossible amount of energy to lift the ship up from one planet to another. If your trip was, say, twenty billions of miles to the next planet, you'd be fighting a gravity as bad as the solar gravity at Earth here all the way—no decline with a little distance like that."

"H-m-m-m—quite true. Then I should say that Mira would take the prize. It's a red giant, and it's an irregular variable. The sunlight there would be as unstable as the weather in New England. It's almost as big as Antares, and it won't hold still. Now that *would* make a bad planetary system."

"It would!" Kendall laughed. But as we know—he laughed too soon, and he shouldn't have used the conditional. He should have said, "It does!"