

Thirteen to Centaurus

by James Graham Ballard, 1930-2009

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Abel knew.

Three months earlier, just after his sixteenth birthday, he had guessed, but had been too unsure of himself, too overwhelmed by the logic of his discovery, to mention it to his parents. At times, lying back half asleep in his bunk while his mother crooned one of the old lays to herself, he would deliberately repress the knowledge, but always it came back, nagging at him insistently, forcing him to jettison most of what he had long regarded as the real world.

None of the other children at the Station could help. They were immersed in their games in Playroom, or chewing pencils over their tests and homework.

„Abel, what’s the matter?” Zenna Peters called after him as he wandered off to the empty store-room on D-Deck. „You’re looking sad again.“

Abel hesitated, watching Zenna’s warm, puzzled smile, then slipped his hands into his pockets and made off, springing down the metal stairway to make sure

she didn't follow him. Once she sneaked into the store-room uninvited and he had pulled the light-bulb out of the socket, shattered about three weeks of conditioning. Dr Francis had been furious.

As he hurried along the D-Deck corridor he listened carefully for the doctor, who had recently been keeping an eye on Abel, watching him shrewdly from behind the plastic models in Playroom. Perhaps Abel's mother had told him about the nightmare, when he would wake from a vice of sweating terror, an image of a dull burning disc fixed before his eyes.

If only Dr Francis could cure him of that dream.

Every six yards down the corridor he stepped through a bulkhead, and idly touched the heavy control boxes on either side of the doorway. Deliberately unfocusing his mind, Abel identified some of the letters above the switches M-T-R SC-N but they scrambled into a blur as soon as he tried to read the entire phrase. Conditioning was too strong. After he trapped her in the store-room Zenna had been able to read a few of the notices, but Dr Francis whisked her away before she could repeat them. Hours later, when she came back, she remembered nothing.

As usual when he entered the store-room, he waited a few seconds before switching on the light, seeing in front of him the small disc of burning light that in his dreams expanded until it filled his brain like a thousand arc lights. It seemed endlessly distant, yet somehow mysteriously potent and magnetic, arousing dormant areas of his mind close to those which responded to his mother's presence.

As the disc began to expand he pressed the switch tab.

To his surprise, the room remained in darkness. He fumbled for the switch, a short cry slipping involuntarily through his lips.

Abruptly, the light went on.

„Hello, Abel,” Dr Francis said easily, right hand pressing the bulb into its socket. „Quite a shock, that one.” He leaned against a metal crate. „I thought we'd have a talk together about your essay.” He took an exercise book out of his white plastic suit as Abel sat down stiffly. Despite his dry smile and warm eyes there was something about Dr Francis that always put Abel on his guard.

Perhaps Dr Francis knew too?

„*The Closed Community*,” Dr Francis read out. „A strange subject for an essay, Abel.”

Abel shrugged. „It was a free choice. Aren't we really expected to choose something unusual?”

Dr Francis grinned. „A good answer. But seriously, Abel, why pick a subject like that?”

Abel fingered the seals on his suit. These served no useful purpose, but by blowing through them it was possible to inflate the suit. „Well, it's a sort of study of life at the Station, how we all get on with each other. What else is there to write about? I don't see that it's so strange.”

„Perhaps not. No reason why you shouldn't write about the Station. All four of the others did too. But you called yours *The Closed Community*. The Station isn't closed, Abel, is it?”

„It's closed in the sense that we can't go outside,” Abel explained slowly. „That's all I meant.”

„Outside,” Dr Francis repeated. „It’s an interesting concept. You must have given the whole subject a lot of thought. When did you first start thinking along these lines?”

„After the dream,” Abel said. Dr Francis had deliberately sidestepped his use of the word „outside” and he searched for some means of getting to the point. In his pocket he felt the small plumbline he carried around. „Dr Francis, perhaps you can explain something to me. Why is the Station revolving?”

„Is it?” Dr Francis looked up with interest. „How do you know?”

Abel reached up and fastened the plumbline to the ceiling stanchion.

„The interval between the ball and the wall is about an eighth of an inch greater at the bottom than at the top. Centrifugal forces are driving it outwards. I calculated that the Station is revolving at about two feet per second.”

Dr Francis nodded thoughtfully. „That’s just about right,” he said matter-of-factly. He stood up. „Let’s take a trip to my office. It looks as if it’s time you and I had a serious talk.”

The Station was on four levels. The lower two contained the crew’s quarters, two circular decks of cabins which housed the 14 people on board the Station. The senior clan was the Peters, led by Captain Theodore, a big stern man of taciturn disposition who rarely strayed from Control. Abel had never been allowed there, but the Captain’s son, Matthew, often described the hushed dome-like cabin filled with luminous dials and flickering lights, the strange humming music.

All the male members of the Peters clan worked in Control—grandfather Peters, a white-haired old man with humorous eyes, had been Captain before Abel was born—and with the Captain’s wife and Zenna they constituted the elite of the Station.

However, the Grangers, the clan to which Abel belonged, was in many respects more important, as he had begun to realize. The day-to-day running of the Station, the detailed programming of emergency drills, duty rosters and commissary menus, was the responsibility of Abel’s father, Matthias, and without his firm but flexible hand the Bakers, who cleaned the cabins and ran the commissary, would never have known what to do. And it was only the deliberate intermingling in Recreation which his father devised that brought the Peters and Bakers together, or each family would have stayed indefinitely in its own cabins.

Lastly, there was Dr Francis. He didn’t belong to any of the three clans. Sometimes Abel asked himself where Dr Francis had come from, but his mind always fogged at a question like that, as the conditioning blocks fell like bulkheads across his thought trains (logic was a dangerous tool at the Station). Dr Francis’ energy and vitality, his relaxed good humour—in a way, he was the only person in the Station who ever made any jokes were out of character with everyone else. Much as he sometimes disliked Dr Francis for snooping around and being a know-all, Abel realized how dreary life in the Station would seem without him.

Dr Francis closed the door of his cabin and gestured Abel into a seat. All the furniture in the Station was bolted to the floor, but Abel noticed that Dr Francis had unscrewed his chair so that he could tilt it backwards. The huge vacuum-proof cylinder of the doctor’s sleeping tank jutted from the wall, its massive metal body able to withstand any accident the Station might suffer. Abel hated the

thought of sleeping in the cylinder—luckily the entire crew quarters were accident-secure—and wondered why Dr Francis chose to live alone up on A-Deck.

„Tell me, Abel,” Dr Francis began, “has it ever occurred to you to ask why the Station is here?”

Abel shrugged. „Well, it’s designed to keep us alive, it’s our home.”

„Yes, that’s true, but obviously it has some other object than just our own survival. Who do you think built the Station in the first place?”

„Our fathers, I suppose, or grandfathers. Or their grandfathers.”

„Fair enough. And where were they before they built it?”

Abel struggled with the *reductio ad absurdum*. „I don’t know, they must have been floating around in mid-air!”

Dr Francis joined in the laughter. „Wonderful thought. Actually it’s not that far from the truth. But we can’t accept that as it stands.”

The doctor’s self-contained office gave Abel an idea. „Perhaps they came from another Station? An even bigger one?”

Dr Francis nodded encouragingly. „Brilliant, Abel. A first-class piece of deduction. All right, then, let’s assume that. Somewhere away from us, a huge Station exists, perhaps a hundred times bigger than this one, maybe even a thousand. Why not?”

„It’s possible,” Abel admitted, accepting the idea with surprising ease.

„Right. Now you remember your course in advanced mechanics—the imaginary planetary system, with the orbiting bodies held together by mutual gravitational attraction? Let’s assume further that such a system actually exists. Okay?”

„Here?” Abel said quickly. „In your cabin?” Then he added „In your sleeping cylinder?”

Dr Francis sat back. „Abel, you do come up with some amazing things. An interesting association of ideas. No, it would be too big for that. Try to imagine a planetary system orbiting around a central body of absolutely enormous size, each of the planets a million times larger than the Station.” When Abel nodded, he went on. „And suppose that the big Station, the one a thousand times larger than this, were attached to one of the planets, and that the people in it decided to go to another planet. So they build a smaller Station, about the size of this one, and send it off through the air. Make sense?”

„In a way.” Strangely, the completely abstract concepts were less remote than he would have expected. Deep in his mind dim memories stirred, interlocking with what he had already guessed about the Station. He gazed steadily at Dr Francis. „You’re saying that’s what the Station is doing? That the planetary system exists?”

Dr Francis nodded. „You’d more or less guessed before I told you. Unconsciously, you’ve known all about it for several years. A few minutes from now I’m going to remove some of the conditioning blocks, and when you wake up in a couple of hours you’ll understand everything. You’ll know then that in fact the Station is a space ship, flying from our home planet, Earth, where our grandfathers were born, to another planet millions of miles away, in a distant orbiting system. Our grandfathers always lived on Earth, and we are the first people ever to undertake such a journey. You can be proud that you’re here. Your grandfather, who volunteered to come, was a great man, and we’ve got to do everything to make sure that the Station keeps running.”

Abel nodded quickly. „When do we get there—the planet we’re flying to?”

Dr Francis looked down at his hands, his face growing sombre. „We’ll never get there, Abel. The journey takes too long. This is a multi-generation space vehicle, only our children will land and they’ll be old by the time they do. But don’t worry, you’ll go on thinking of the Station as your only home, and that’s deliberate, so that you and your children will be happy here.”

He went over to the TV monitor screen by which he kept in touch with Captain Peters, his fingers playing across the control tabs. Suddenly the screen lit up, a blaze of fierce points of light flared into the cabin, throwing a brilliant phosphorescent glitter across the walls, dappling Abel’s hands and suit. He gaped at the huge balls of fire, apparently frozen in the middle of a giant explosion, hanging in vast patterns.

„This is the celestial sphere,” Dr Francis explained. „The starfield into which the Station is moving.” He touched a bright speck of light in the lower half of the screen. „Alpha Centauri, the star around which revolves the planet the Station will one day land upon.” He turned to Abel. „You remember all these terms I’m using, don’t you, Abel? None of them seems strange.”

Abel nodded, the wells of his unconscious memory flooding into his mind as Dr Francis spoke. The TV screen blanked and then revealed a new picture. They appeared to be looking down at an enormous top-like structure, the flanks of a metal pylon sloping towards its centre. In the background the starfield rotated slowly in a clockwise direction. „This is the Station,” Dr Francis explained, „seen from a camera mounted in the nose boom. All visual checks have to be made indirectly, as the stellar radiation would blind us. Just below the ship you can see a single star, the Sun, from which we set out 50 years ago. It’s now almost too distant to be visible, but a deep inherited memory of it is the burning disc you see in your dreams. We’ve done what we can to erase it, but unconsciously all of us see it too.”

He switched off the set and the brilliant pattern of light swayed and fell back. „The social engineering built into the ship is far more intricate than the mechanical, Abel. It’s three generations since the Station set off, and birth, marriage and birth again have followed exactly as they were designed to. As your father’s heir great demands are going to be made on your patience and understanding. Any disunity here would bring disaster. The conditioning programmes are not equipped to give you more than a general outline of the course to follow. Most of it will be left to you.”

„Will you always be here?”

Dr Francis stood up. „No, Abel, I won’t. No one here lives forever. Your father will die, and Captain Peters and myself.” He moved to the door. „We’ll go now to Conditioning. In three hours’ time, when you wake up, you’ll find yourself a new man.”

Letting himself back into his cabin, Francis leaned wearily against the bulkhead, feeling the heavy rivets with his fingers, here and there flaking away as the metal slowly rusted. When he switched on the TV set he looked tired and dispirited, and gazed absently at the last scene he had shown Abel, the boom

camera's view of the ship. He was just about to select another frame when he noticed a dark shadow swing across the surface of the hull.

He leaned forward to examine it, frowning in annoyance as the shadow moved away and faded among the stars. He pressed another tab, and the screen divided into a large chessboard, five frames wide by five deep. The top line showed Control, the main pilot and navigation deck lit by the dim glow of the instrument panels, Captain Peters sitting impassively before the compass screen.

Next, he watched Matthias Granger begin his afternoon inspection of the ship. Most of the passengers seemed reasonably happy, but their faces lacked any lustre. All spent at least 2-3 hours each day bathing in the UV light flooding through the recreation lounge, but the pallor continued, perhaps an unconscious realization that they had been born and were living in what would also be their own tomb. Without the continuous conditioning sessions, and the hypnotic reassurance of the sub-sonic voices, they would long ago have become will-less automatons.

Switching off the set, he prepared to climb into the sleeping cylinder. The airlock was three feet in diameter, waisthigh off the floor. The time seal rested at zero, and he moved it forward 12 hours, then set it so that the seal could only be broken from within. He swung the lock out and crawled in over the moulded foam mattress, snapping the door shut behind him.

Lying back in the thin yellow light, he slipped his fingers through the ventilator grille in the rear wall, pressed the unit into its socket and turned it sharply. Somewhere an electric motor throbbed briefly, the end wall of the cylinder swung back slowly like a vault door and bright daylight poured in.

Quickly, Francis climbed out onto a small metal platform that jutted from the upper slope of a huge white asbestos-covered dome. Fifty feet above was the roof of a large hangar. A maze of pipes and cables traversed the surface of the dome, interlacing like the vessels of a giant bloodshot eye, and a narrow stairway led down to the floor below. The entire dome, some 150 feet wide, was revolving slowly. A line of five trucks was drawn up by the stores depot on the far side of the hangar, and a man in a brown uniform waved to him from one of the glass-walled offices.

At the bottom of the ladder he jumped down on to the hangar floor, ignoring the curious stares from the soldiers unloading the stores. Halfway across he craned up at the revolving bulk of the dome. A black perforated sail, 50 feet square, like a fragment of a planetarium, was suspended from the roof over the apex of the dome, a TV camera directly below it, a large metal sphere mounted about five feet from the lens. One of the guy-ropes had snapped and the sail tilted slightly to reveal the catwalk along the centre of the roof.

He pointed this out to a maintenance sergeant warming his hands in one of the ventilator outlets from the dome. „You'll have to string that back. Some fool was wandering along the catwalk and throwing his shadow straight on to the model. I could see it clearly on the TV screen. Luckily no one spotted it.”

„Okay, Doctor, I'll get it fixed.” He chuckled sourly. „That would have been a laugh, though. Really give them something to worry about.”

The man's tone annoyed Francis. „They've got plenty to worry about as it is.”

„I don't know about that, Doctor. Some people here think they have it all ways. Quiet and warm in there, nothing to do except sit back and listen to those hypno-drills.” He looked out bleakly at the abandoned airfield stretching away to the-cold tundra beyond the perimeter, and turned up his collar. „We're the boys back here on Mother Earth who do the work, out in this Godforsaken dump. If you need any more spacecadets, Doctor, remember me.”

Francis managed a smile and stepped into the control office, made his way through the clerks sitting at trestle tables in front of the progress charts. Each carried the name of one of the dome passengers and a tabulated breakdown of progress through the psychometric tests and conditioning programmes. Other charts listed the day's rosters, copies of those posted that morning by Matthias Granger.

Inside Colonel Chalmers' office Francis relaxed back gratefully in the warmth, describing the salient features of his day's observation. „I wish you could go in there and move around them, Paul,” he concluded. „It's not the same spying through the TV cameras. You've got to talk to them, measure yourself against people like Granger and Peters.”

„You're right, they're fine men, like all the others. It's a pity they're wasted there.”

„They're not wasted,” Francis insisted. „Every piece of data will be immensely valuable when the first space ships set out.” He ignored Chalmers' muttered „If they do” and went on: „Zenna and Abel worry me a little. It may be necessary to bring forward the date of their marriage. I know it will raise eyebrows, but the girl is as fully mature at 15 as she will be four years from now, and she'll be a settling influence on Abel, stop him from thinking too much.”

Chalmers shook his head doubtfully. „Sounds a good idea, but a girl of 15 and a boy of 16—? You'd raise a storm, Roger. Technically they're wards of court, every decency league would be up in arms.”

Francis gestured irritably. „Need they know? We've really got a problem with Abel, the boy's too clever. He'd more or less worked out for himself that the Station was a space ship, he merely lacked the vocabulary to describe it. Now that we're starting to lift the conditioning blocks he'll want to know everything. It will be a big job to prevent him from smelling a rat, particularly with the slack way this place is being run. Did you see the shadow on the TV screen? We're damn lucky Peters didn't have a heart attack.”

Chalmers nodded. „I'm getting that tightened up. A few mistakes are bound to happen, Roger. It's damn cold for the control crew working around the dome. Try to remember that the people outside are just as important as those inside.”

„Of course. The real trouble is that the budget is ludicrously out of date. It's only been revised once in 50 years. Perhaps General Short can generate some official interest, get a new deal for us. He sounds like a pretty brisk new broom.” Chalmers pursed his lips doubtfully, but Francis continued „I don't know whether the tapes are wearing out, but the negative conditioning doesn't hold as well as it used to. We'll probably have to tighten up the programmes. I've made a start by pushing Abel's graduation forward.”

„Yes, I watched you on the screen here. The control boys became quite worked up next door. One or two of them are as keen as you, Roger, they'd been

programming ahead for three months. It meant a lot of time wasted for them. I think you ought to check with me before you make a decision like that. The dome isn't your private laboratory."

Francis accepted the reproof. Lamely, he said „It was one of those spot decisions, I'm sorry. There was nothing else to do."

Chalmers gently pressed home his point. „I'm not so sure. I thought you rather overdid the long-term aspects of the journey. Why go out of your way to tell him he would never reach planet-fall? It only heightens his sense of isolation, makes it that much more difficult if we decide to shorten the journey."

Francis looked up. „There's no chance of that, is there?"

Chalmers paused thoughtfully. „Roger, I really advise you not to get too involved with the project. Keep saying to yourself *they're-not-going-to-Alpha-Centauri*. They're here on Earth, and if the government decided it they'd be let out tomorrow. I know the courts would have to sanction it but that's a formality. It's 50 years since this project was started and a good number of influential people feel that it's gone on for too long. Ever since the Mars and Moon colonies failed, space programmes have been cut right back. They think the money here is being poured away for the amusement of a few sadistic psychologists."

„You know that isn't true," Francis retorted. „I may have been over-hasty, but on the whole this project has been scrupulously conducted. Without exaggeration, if you did send a dozen people on a multi-generation ship to Alpha Centauri you couldn't do better than duplicate everything that's taken place here, down to the last cough and sneeze. If the information we've obtained had been available the Mars and Moon colonies never would have failed!"

„True. But irrelevant. Don't you understand, when everyone was eager to get into space they were prepared to accept the idea of a small group being sealed into a tank for 100 years, particularly when the original team volunteered. Now, when interest has evaporated, people are beginning to feel that there's something obscene about this human zoo; what began as a grand adventure of the spirit of Columbus, has become a grisly joke. In one sense we've learned too much—the social stratification of the three families is the sort of unwelcome datum that doesn't do the project much good. Another is the complete ease with which we've manipulated them, made them believe anything we've wanted." Chalmers leaned forward across the desk. „Confidentially, Roger, General Short has been put in command for one reason only—to close this place down. It may take years, but it's going to be done, I warn you. The important job now is to get those people out of there, not keep them in."

Francis stared bleakly at Chalmers. „Do you really believe that?"

„Frankly, Roger, yes. This project should never have been launched. You can't manipulate people the way we're doing—the endless hypno-drills, the forced pairing of children—look at yourself, five minutes ago you were seriously thinking of marrying two teenage children just to stop them using their minds. The whole thing degrades human dignity, all the taboos, the increasing degree of introspection—sometimes Peters and Granger don't speak to anyone for two or three weeks—the way life in the dome has become tenable only by accepting the insane situation as the normal one. I think the reaction against the project is healthy."

Francis stared out at the dome. A gang of men were loading the so-called *compressed food* (actually frozen foods with the brand names removed) into the commissary hatchway. Next morning, when Baker and his wife dialled the pre-arranged menu, the supplies would be promptly delivered, apparently from the space-hold. To some people, Francis knew, the project might well seem a complete fraud.

Quietly he said: „The people who volunteered accepted the sacrifice, and all it involved. How’s Short going to get them out? Just open the door and whistle?”

Chalmers smiled, a little wearily. „He’s not a fool, Roger. He’s as sincerely concerned about their welfare as you are. Half the crew, particularly the older ones, would go mad within five minutes. But don’t be disappointed, the project has more than proved its worth.”

„It won’t do that until they *land*. If the project ends it will be we who have failed, not them. We can’t rationalize by saying it’s cruel or unpleasant. We owe it to the 14 people in the dome to keep it going.”

Chalmers watched him shrewdly. „14? You mean 13, don’t you, Doctor? Or are you inside the dome too?”

This ship had stopped rotating. Sitting at his desk in Command, planning the next day’s fire drill, Abel noticed the sudden absence of movement. All morning, as he walked around the ship—he no longer used the term Station—he had been aware of an inward drag that pulled him towards the wall, as if one leg were shorter than the other.

When he mentioned this to his father the older man merely said: „Captain Peters is in charge of Control. Always let him worry where the navigation of the ship is concerned.”

This sort of advice now meant nothing to Abel. In the previous two months his mind had attacked everything around him voraciously, probing and analysing, examining every facet of life in the Station. An enormous, once-suppressed vocabulary of abstract terms and relationships lay latent below the surface of his mind, and nothing would stop him applying it.

Over their meal trays in the commissary he grilled Matthew Peters about the ship’s flight path, the great parabola which would carry it to Alpha Centauri.

„What about the currents built into the ship?” he asked. „The rotation was designed to eliminate the magnetic poles set up when the ship was originally constructed. How are you compensating for that?”

Matthew looked puzzled. „I’m not sure, exactly. Probably the instruments are automatically compensated.” When Abel smiled sceptically he shrugged. „Anyway, Father knows all about it. There’s no doubt we’re right on course.”

„We hope,” Abel murmured *sotto voce*. The more Abel asked Matthew about the navigational devices he and his father operated in Control the more obvious it became that they were merely carrying out low-level instrument checks, and that their role was limited to replacing burnt-out pilot lights. Most of the instruments operated automatically, and they might as well have been staring at cabinets full of mattress flock.

What a joke if they were!

Smiling to himself, Abel realized that he had probably stated no more than the truth. It would be unlikely for the navigation to be entrusted to the crew when the slightest human error could throw the space ship irretrievably out of control, send it hurtling into a passing star. The designers of the ship would have sealed the automatic pilots well out of reach, given the crew light supervisory duties that created an illusion of control.

That was the real clue to life aboard the ship. None of their roles could be taken at face value. The day-to-day, minute-to-minute programming carried out by himself and his father was merely a set of variations on a pattern already laid down; the permutations possible were endless, but the fact that he could send Matthew Peters to the commissary at 12 o'clock rather than 12.30 didn't give him any real power over Matthew's life. The master programmes printed by the computers selected the day's menus, safety drills and recreation periods, and a list of names to choose from, but the slight leeway allowed, the extra two or three names supplied, were here in case of illness, not to give Abel any true freedom of choice.

One day, Abel promised himself, he would programme himself out of the conditioning sessions. Shrewdly he guessed that the conditioning still blocked out a great deal of interesting material, that half his mind remained submerged. Something about the ship suggested that there might be more to it than—

„Hello, Abel, you look far away.” Dr Francis sat down next to him. „What's worrying you?”

„I was just calculating something,” Abel explained quickly. „Tell me, assuming that each member of the crew consumes about three pounds of non-circulated food each day, roughly half a ton per year, the total cargo must be about 800 tons, and that's not allowing for any supplies after planet-fall. There should be at least 1,500 tons aboard. Quite a weight.”

„Not in absolute terms, Abel. The Station is only a small fraction of the ship. The main reactors, fuel tanks and space holds together weigh over 30,000 tons. They provide the gravitational pull that holds you to the floor.”

Abel shook his head slowly. „Hardly, Doctor. The attraction must come from the stellar gravitational fields, or the weight of the ship would have to be about 6 x 10²⁰ tons.”

Dr Francis watched Abel reflectively, aware that the young man had led him into a simple trap. The figure he had quoted was near enough the Earth's mass. „These are complex problems, Abel. I wouldn't worry too much about stellar mechanics. Captain Peters has that responsibility.”

„I'm not trying to usurp it,” Abel assured him. „Merely to extend my own knowledge. Don't you think it might be worth departing from the rules a little? For example, it would be interesting to test the effects of continued isolation. We could select a small group, subject them to artificial stimuli, even seal them off from the rest of the crew and condition them to believe they were back on Earth. It could be a really valuable experiment, Doctor.”

As he waited in the conference room for General Short to finish his opening harangue, Francis repeated the last sentence to himself, wondering idly what Abel,

with his limitless enthusiasm, would have made of the circle of defeated faces around the table.

„...regret as much as you do, gentlemen, the need to discontinue the project. However, now that a decision has been made by the Space Department, it is our duty to implement it. Of course, the task won't be an easy one. What we need is a phased withdrawal, a gradual readjustment of the world around the crew that will bring them down to Earth as gently as a parachute.” The General was a brisk, sharp-faced man in his fifties, with burly shoulders but sensitive eyes. He turned to Dr Kersh, who was responsible for the dietary and biometric controls aboard the dome. „From what you tell me, Doctor, we might not have as much time as we'd like. This boy Abel sounds something of a problem.”

Kersh smiled. „I was looking in at the commissary, overheard him tell Dr Francis that he wanted to run an experiment on a small group of the crew. An isolation drill, would you believe it. He's estimated that the tractor crews may be isolated for up to two years when the first foraging trips are made.”

Captain Sanger, the engineering officer, added: „He's also trying to duck his conditioning sessions. He's wearing a couple of foam pads under his earphones, missing about 90 per cent of the subsonics. We spotted it when the EEG tape we record showed no alpha waves. At first we thought it was a break in the cable, but when we checked visually on the screen we saw that he had his eyes open. He wasn't listening.”

Francis drummed on the table. „It wouldn't have mattered. The subsonic was a maths instruction sequence—the fourfigure antilog system.”

„A good thing he did miss them,” Kersh said with a laugh. „Sooner or later he'll work out that the dome is travelling in an elliptical orbit 93 million miles from a dwarf star of the G0 spectral class.”

„What are you doing about this attempt to evade conditioning, Dr Francis?” Short asked. When Francis shrugged vaguely he added: „I think we ought to regard the matter fairly seriously. From now on we'll be relying on the programming.”

Flatly, Francis said: „Abel will resume the conditioning. There's no need to do anything. Without the regular daily contact he'll soon feel lost. The sub-sonic voice is composed of his mother's vocal tones; when he no longer hears it he'll lose his orientations, feel completely deserted.”

Short nodded slowly. „Well, let's hope so.” He addressed Dr Kersh. „At a rough estimate, Doctor, how long will it take to bring them back? Bearing in mind they'll have to be given complete freedom and that every TV and newspaper network in the world will interview each one a hundred times.”

Kersh chose his words carefully. „Obviously a matter of years, General. All the conditioning drills will have to be gradually rescored; as a stop-gap measure we may need to introduce a meteor collision... guessing, I'd say three to five years. Possibly longer.”

„Fair enough. What would you estimate, Dr Francis?”

Francis fiddled with his blotter, trying to view the question seriously. „I've no idea. Bring them back. What do you really mean, General? Bring what back?” Irritated, he snapped: „A hundred years.”

Laughter crossed the table, and Short smiled at him, not unamiably.

„That’s fifty years more than the original project, Doctor. You can’t have been doing a very good job here.”

Francis shook his head. „You’re wrong, General. The original project was to get them to Alpha Centauri. Nothing was said about bringing them back.” When the laughter fell away Francis cursed himself for his foolishness; antagonizing the General wouldn’t help the people in the dome.

But Short seemed unruffled. „All right, then, it’s obviously going to take some time.” Pointedly, with a glance at Francis he added: „It’s the men and women in the ship we’re thinking of, not ourselves; if we need a hundred years we’ll take them, not one less. You may be interested to hear that the Space Department chiefs feel about fifteen years will be necessary. At least.” There was a quickening of interest around the table. Francis watched Short with surprise. In fifteen years a lot could happen, there might be another spaceward swing of public opinion.

„The Department recommends that the project continue as before, with whatever budgetary parings we can make—stopping the dome is just a start—and that we condition the crew to believe that a round trip is in progress, that their mission is merely one of reconnaissance, and that they are bringing vital information back to Earth. When they step out of the spaceship they’ll be treated as heroes and accept the strangeness of the world around them.” Short looked across the table, waiting for someone to reply. Kersh stared doubtfully at his hands, and Sanger and Chalmers played mechanically with their blotters.

Just before Short continued Francis pulled himself together, realizing that he was faced with his last opportunity to save the project. However much they disagreed with Short, none of the others would try to argue with him.

„I’m afraid that won’t do, General,” he said, „though I appreciate the Department’s foresight and your own sympathetic approach. The scheme you’ve outlined sounds plausible, but it just won’t work.” He sat forward, his voice controlled and precise. „General, ever since they were children these people have been trained to accept that they were a closed group, and would never have contact with anyone else. On the unconscious level, on the level of their functional nervous systems, no one else in the world exists, for them the neuronics basis of reality is isolation. You’ll never train them to invert their whole universe, any more than you can train a fish to fly. If you start to tamper with the fundamental patterns of their psyches you’ll produce the sort of complete mental block you see when you try to teach a left-handed person to use his right.”

Francis glanced at Dr Kersh, who was nodding in agreement. „Believe me, General, contrary to what you and the Space Department naturally assume, the people in the dome do not want to come out. Given the choice they would prefer to stay there, just as the goldfish prefers to stay in its bowl.”

Short paused before replying, evidently re-assessing Francis. „You may be right, Doctor,” he admitted. „But where does that get us? We’ve got 15 years, perhaps 25 at the outside.”

„There’s only one way to do it,” Francis told him. „Let the project continue, exactly as before, but with one difference. Prevent them from marrying and having children. In 25 years only the present younger generation will still be alive, and a further five years from then they’ll all be dead. A life span in the dome is little

more than 45 years. At the age of 30 Abel will probably be an old man. When they start to die off no one will care about them any longer.”

There was a full half minute’s silence, and then Kersh said: „It’s the best suggestion, General. Humane, and yet faithful both to the original project and the Department’s instructions. The absence of children would be only a slight deviation from the conditioned pathway. The basic isolation of the group would be strengthened, rather than diminished, also their realization that they themselves will never see planet-fall. If we drop the pedagogical drills and play down the space flight they will soon become a small close community, little different from any other out-group on the road to extinction.”

Chalmers cut in: „Another point, General. It would be far easier—and cheaper—to stage, and as the members died off we could progressively close down the ship until finally there might be only a single deck left, perhaps even a few cabins.”

Short stood up and paced over to the window, looking out through the clear glass over the frosted panes at the great dome in the hangar.

„It sounds a dreadful prospect,” he commented. „Completely insane. As you say, though, it may be the only way out.”

Moving quietly among the trucks parked in the darkened hangar, Francis paused for a moment to look back at the lighted windows of the control deck. Two or three of the night staff sat watch over the line of TV screens, half asleep themselves as they observed the sleeping occupants of the dome.

He ducked out of the shadows and ran across to the dome, climbed the stairway to the entrance point thirty feet above. Opening the external lock, he crawled in and closed it behind him, then unfastened the internal entry hatch and pulled himself out of the sleeping cylinder into the silent cabin.

A single dim light glowed over the TV monitor screen as it revealed the three orderlies in the control deck, lounging back in a haze of cigarette smoke six feet from the camera.

Francis turned up the speaker volume, then tapped the mouthpiece sharply with his knuckle.

Tunic unbuttoned, sleep still shadowing his eyes, Colonel Chalmers leaned forward intently into the screen, the orderlies at his shoulder.

„Believe me, Roger, you’re proving nothing. General Short and the Space Department won’t withdraw their decision now that a special bill of enactment has been passed.” When Francis still looked sceptical he added: „If anything, you’re more likely to jeopardize them.”

„I’ll take a chance,” Francis said. „Too many guarantees have been broken in the past. Here I’ll be able to keep an eye on things.” He tried to sound cool and unemotional; the cine-cameras would be recording the scene and it was important to establish the right impression. General Short would be only too keen to avoid a scandal. If he decided Francis was unlikely to sabotage the project he would probably leave him in the dome.

Chalmers pulled up a chair, his face earnest, „Roger, give yourself time to reconsider everything. You may be more of a discordant element than you realize. Remember, nothing would be easier than getting you out—a child could cut his way through the rusty hull with a blunt can-opener.”

„Don't try it,” Francis warned him quietly. „I'll be moving down to C-Deck, so if you come in after me they'll all know. Believe me, I won't try to interfere with the withdrawal programmes. And I won't arrange any teen-age marriages. But I think the people inside may need me now for more than eight hours a day.”

„Francis!” Chalmers shouted. „Once you go down there you'll never come out! Don't you realize you're entombing yourself in a situation that's totally unreal? You're deliberately withdrawing into a nightmare, sending yourself off on a non-stop journey to nowhere!”

Curtly, before he switched the set off for the last time, Francis replied: „Not nowhere, Colonel: Alpha Centauri.”

Sitting down thankfully in the narrow bunk in his cabin, Francis rested briefly before setting off for the commissary. All day he had been busy coding the computer punch tapes for Abel, and his eyes ached with the strain of manually stamping each of the thousands of minuscule holes. For eight hours he had sat without a break in the small isolation cell, electrodes clamped to his chest, knees and elbows while Abel measured his cardiac and respiratory rhythms.

The tests bore no relation to the daily programmes Abel now worked out for his father, and Francis was finding it difficult to maintain his patience. Initially Abel had tested his ability to follow a prescribed set of instructions, producing an endless exponential function, then a digital representation of pi to a thousand places. Finally Abel had persuaded Francis to cooperate in a more difficult test—the task of producing a totally random sequence. Whenever he unconsciously repeated a simple progression, as he did if he was tired or bored, or a fragment of a larger possible progression, the computer scanning his progress sounded an alarm on the desk and he would have to start afresh. After a few hours the buzzer rasped out every ten seconds, snapping at him like a bad-tempered insect. Francis had finally hobbled over to the door that afternoon, entangling himself in the electrode leads, found to his annoyance that the door was locked (ostensibly to prevent any interruption by a fire patrol), then saw through the small porthole that the computer in the cubicle outside was running unattended.

But when Francis' pounding roused Abel from the far end of the next laboratory he had been almost irritable with the doctor for wanting to discontinue the experiment.

„Damn it, Abel, I've been punching away at these things for three weeks now.” He winced as Abel disconnected him, brusquely tearing off the adhesive tape. „Trying to produce random sequences isn't all that easy my sense of reality is beginning to fog.” (Sometimes he wondered if Abel was secretly waiting for this.) „I think I'm entitled to a vote of thanks.”

„But we arranged for the trial to last three days, Doctor,” Abel pointed out. „It's only later that the valuable results begin to appear. It's the errors you make that are interesting. The whole experiment is pointless now.”

„Well, it's probably pointless anyway. Some mathematicians used to maintain that a random sequence was impossible to define.”

„But we can assume that it is possible,” Abel insisted. „I was just giving you some practice before we started on the trans-finite numbers.”

Francis baulked here. „I'm sorry, Abel. Maybe I'm not so fit as I used to be. Anyway, I've got other duties to attend to.”

„But they don't take long, Doctor. There's really nothing for you to do now.”

He was right, as Francis was forced to admit. In the year he had spent in the dome Abel had remarkably streamlined the daily routines, provided himself and Francis with an excess of leisure time, particularly as the latter never went to conditioning (Francis was frightened of the sub-sonic voices—Chalmers and Short would be subtle in their attempts to extricate him, perhaps too subtle).

Life aboard the dome had been more of a drain on him than he anticipated. Chained to the routines of the ship, limited in his recreations and with few intellectual pastimes—there were no books aboard the ship—he found it increasingly difficult to sustain his former good humour, was beginning to sink into the deadening lethargy that had overcome most of the other crew members. Matthias Granger had retreated to his cabin, content to leave the programming to Abel, spent his time playing with a damaged clock, while the two Peters rarely strayed from Control. The three wives were almost completely inert, satisfied to knit and murmur to each other. The days passed indistinguishably. Sometimes Francis told himself wryly he nearly did believe that they were en route for Alpha Centauri. That would have been a joke for General Short!

At 6.30 when he went to the commissary for his evening meal, he found that he was a quarter of an hour late.

„Your meal time was changed this afternoon,” Baker told him, lowering the hatchway. „I got nothing ready for you.”

Francis began to remonstrate but the man was adamant. „I can't make a special dip into space-hold just because you didn't look at Routine Orders can I, Doctor?”

On the way out Francis met Abel, tried to persuade him to countermand the order. „You could have warned me, Abel. Damnation, I've been sitting inside your test rig all afternoon.”

„But you went back to your cabin, Doctor,” Abel pointed out smoothly. „You pass three SRO bulletins on your way from the laboratory. Always look at them at every opportunity, remember. Last-minute changes are liable at any time. I'm afraid you'll have to wait until 10.30 now.”

Francis went back to his cabin, suspecting that the sudden change had been Abel's revenge on him for discontinuing the test. He would have to be more conciliatory with Abel, or the young man could make his life a hell, literally starve him to death. Escape from the dome was impossible now—there was a mandatory 20 year sentence on anyone making an unauthorized entry into the space simulator.

After resting for an hour or so, he left his cabin at 8 o'clock to carry out his duty checks of the pressure seals by the B-Deck Meteor Screen. He always went through the pretence of reading them, enjoying the sense of participation in the space flight which the exercise gave him, deliberately accepting the illusion.

The seals were mounted in the control point set at ten yard intervals along the perimeter corridor, a narrow circular passageway around the main corridor. Alone there, the servos clicking and snapping, he felt at peace within the space vehicle. „Earth itself is in orbit around the Sun,” he mused as he checked the seals, „and the whole solar system is travelling at 40 miles a second towards the constellation Lyra. The degree of illusion that exists is a complex question.”

Something cut through his reverie.

The pressure indicator was flickering slightly. The needle wavered between 0.001 and 0.0015 psi. The pressure inside the dome was fractionally above atmospheric, in order that dust might be expelled through untoward cracks (though the main object of the pressure seals was to get the crew safely into the vacuum-proof emergency cylinders in case the dome was damaged and required internal repairs).

For a moment Francis panicked, wondering whether Short had decided to come in after him—the reading, although meaningless, indicated that a breach had opened in the hull. Then the hand moved back to zero, and footsteps sounded along the radial corridor at right angles past the next bulkhead.

Quickly Francis stepped into its shadow. Before his death old Peters had spent a lot of time mysteriously pottering around the corridor, probably secreting a private food cache behind one of the rusting panels.

He leaned forward as the footsteps crossed the corridor.

Abel?

* * * * *

He watched the young man disappear down a stairway, then made his way into the radial corridor, searching the steelgrey sheeting for a retractable panel. Immediately adjacent to the end wall of the corridor, against the outer skin of the dome, was a small fire control booth.

A tuft of slate-white hairs lay on the floor of the booth.

Asbestos fibres!

Francis stepped into the booth, within a few seconds located a loosened panel that had rusted off its rivets. About ten inches by six, it slid back easily. Beyond it was the outer wall of the dome, a hand's breadth away. Here too was a loose plate, held in position by a crudely fashioned hook.

Francis hesitated, then lifted the hook and drew back the panel.

He was looking straight down into the hangar!

Below, a line of trucks was disgorging supplies on to the concrete floor under a couple of spotlights, a sergeant shouting orders at the labour squad. To the right was the control deck, Chalmers in his office on the evening shift.

The spy-hole was directly below the stairway, and the overhanging metal steps shielded it from the men in the hangar. The asbestos had been carefully frayed so that it concealed the retractable plate. The wire hook was as badly rusted as the rest of the hull, and Francis estimated that the window had been in use for over 30 or 40 years.

So almost certainly old Peters had regularly looked out through the window, and knew perfectly well that the space ship was a myth. None the less he had stayed aboard, perhaps realizing that the truth would destroy the others, or preferring to be captain of an artificial ship rather than a self-exposed curiosity in the world outside.

Presumably he had passed on the secret. Not to his bleak taciturn son, but to the one other lively mind, one who would keep the secret and make the most of it. For his own reasons he too had decided to stay in the dome, realizing that he would soon be the effective captain, free to pursue his experiments in applied psychology. He might even have failed to grasp that Francis was not a true

member of the crew. His confident mastery of the programming, his lapse of interest in Control, his casualness over the safety devices, all meant one thing—Abel knew!

