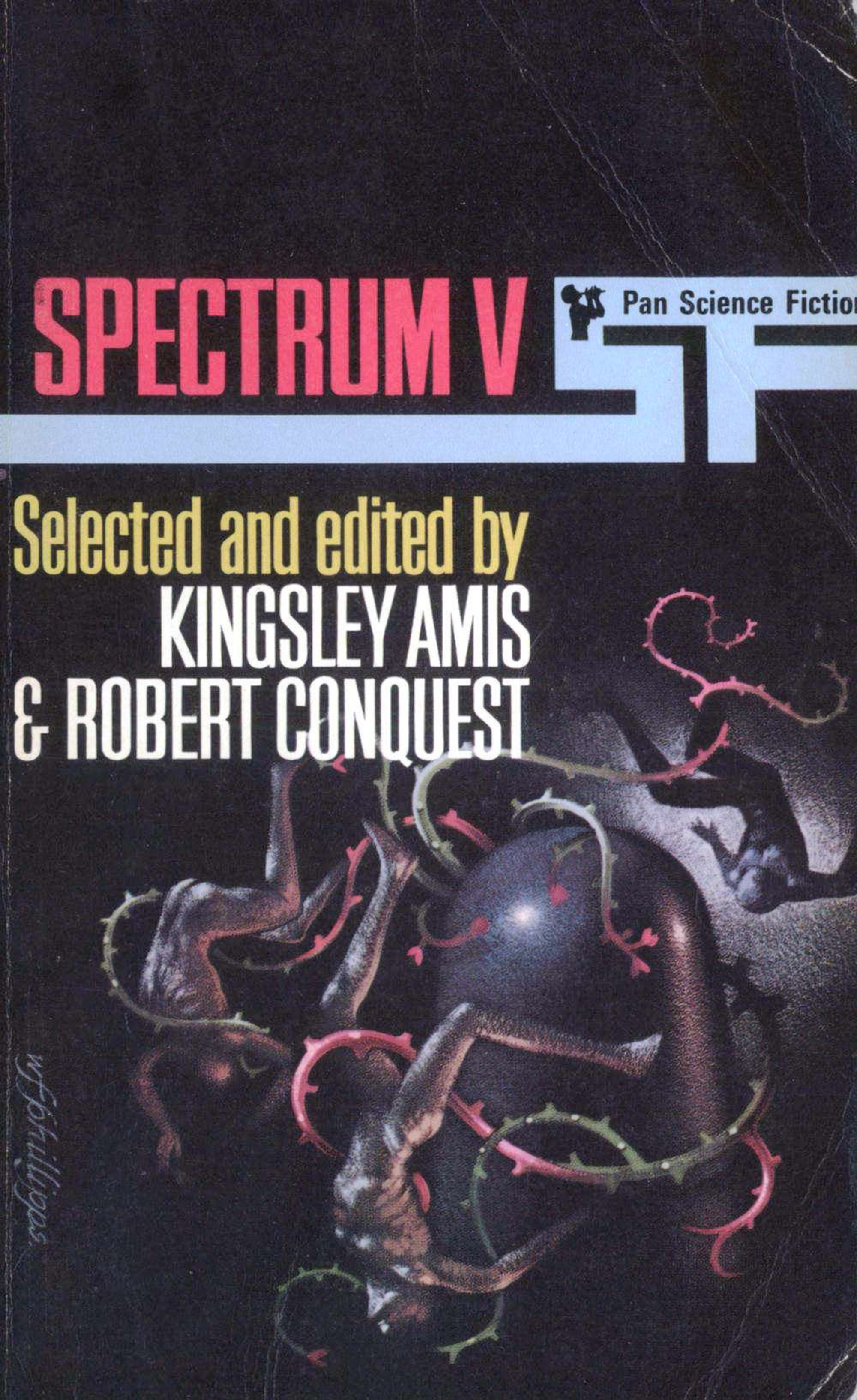
SPECTRUM V

Pan Science Fiction

SF

Selected and edited by KINGSLEY AMIS & ROBERT CONQUEST



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'interest in science fiction . . .
imaginative bankruptcy.'
(an author-critic censuring C. S. Lewis, Angus Wilson, William Golding, etc.)

Imagination that debars
The deeps of time, the endless stars,
May grow too numb to harmonize
Its own rag-doll's two button-eyes.

INTRODUCTION

IN *Spectrum IV* we dispensed, for the first time, with an argumentative preface, but it is now clear that there is still plenty to argue about. The reviewer in the *Times Literary Supplement*, for instance, said we would certainly agree that science fiction stands or falls by 'style'. Oh no we wouldn't. John Bowen in *The Sunday Times* wrote that in science fiction 'the characters do not develop, and are not examined in depth' – offering this, seemingly, as a complaint, and a relevant one. Since confusion on these two heads persists, inside the genre as well as in commentary upon it, it may be worth briefly battering away at them yet again, particularly as we have noted an unfortunate tendency even in the excellent *Magazine of Fantasy and Science Fiction*, to demand of the works it reviews all the structures and depths and levels and characterizations and completenesses which, emerging from the English departments, have for so many decades now hung threateningly above ordinary fiction – without noticeably improving it. It would be a pity if science fiction were to become yet another well-policed province of today's or yesterday's literary ideologies.

Hostile critics will generally except Jules Verne from their strictures: indeed, it is a favourite sneer of theirs to lament the failure of his successors to advance beyond the point he reached a century ago. Recourse to any of his texts (in English translation, indeed, but it seems fair to assume that these are what most such critics will be speaking of) shows him to be a stylistic barbarian. His narrative passages are of the utmost baldness, with occasional relief in the shape of a banal apostrophe or rhetorical question; his dialogue is a tissue of ineptitudes. Furthermore, he often contrives his story-lines badly, showing little sense of climax; he has no interest in character (see below); he is not even scientifically accurate. And yet he continues to haunt the imagination, displaying that curious property –

shared perhaps with Dickens? – of making his effect through the memory rather than by direct reading experience, so that each novel starts to improve in retrospect as soon as it is laid down. Verne's innumerable incapacities fade from the mind before the big mythic themes – the mysterious island, the wonderful submarine, the moon voyage – that engaged him. As C. S. Lewis pointed out, a myth works without the intervention of style.

A more modern example reinforces the point. The story 'Who Goes There?' by Don A. Stuart – actually John W. Campbell, editor of *Analog* – has become, in its pre-World War II mode, a minor classic. (It was hideously travestied in the film *The Thing from Another World*.) It can hardly be that science fiction readers in the mass are just too stylistically insensitive to have noticed its obvious blemishes. Far more likely they, like ourselves, endured these for the sake of the brilliantly engineered main problem – briefly, that of determining which members of an isolated group of people have, and which have not, become possessed by a malignant symbiotic intelligence – together with its unexpected but logical solution. In this story, idea plays a part analogous to that of myth in Verne's novels.

We cannot, however, gloss over the objection that to endure bad style, however cheerfully, is less agreeable than to enjoy good; indeed, crossing the floor for a moment, we cannot help wishing that some science-fiction writers would stop to think about the problem occasionally, instead of assuming, or going on as if they assumed, that style is a highbrow affectation to do with semi-colons and long words. Even this, though, is less of a danger than the heresy, traceable probably to the example of that first great corrupter, Ray Bradbury, that style is a matter of whimsy, poeticality, fanciful and fancy imagery. Few writers in the field would fail to benefit from a study of Wells's romances.

To resume our former stance: George Orwell cogently remarks of Jack London that his stories are not well written, but are well told. The best thing, of course, is to have both virtues; but if we are to give up one or the other, good telling without good writing seems indisputably preferable to good writing without good telling. In particular, it seems reasonable to

decide that, while more stylists of the calibre of J. G. Ballard or Algis Budrys would be heartily welcome, stylistic distinction is neither a necessary nor a characteristic virtue of science fiction. Something humbler is more appropriate, the efficient prose of a Defoe or, not to set our sights too high, a Captain Slocombe. One might say the same of other kinds of genre fiction, the detective story, perhaps the espionage thriller; while, rounding off this part of the argument with a brief counter-attack, one might say of much fiction of the main stream that concentration on style often goes with a thinning of content, and that Henry James chewed more than he bit off.

A concern for style goes with a certain kind of concern for character. The novel of style is also the novel of human relations, which is another name for the traditional novel of the last three hundred years, and a handy short description of what science fiction is not. The point was clear at the outset – taking the same outset as before. Verne's characters do not develop, and are not examined at all. The standard is set by the trio of *Five Weeks in a Balloon*: more or less eccentric, ludicrously resourceful scientist, brave and honourable man of action (supposedly), semi-comic but loyal servant-type. They reappear almost unchanged in *20,000 Leagues under the Sea*, with the addition of Captain Nemo, the foe of mankind. Nemo is another of Verne's mythic creations, not a character in the sense that Chaucer's Wife of Bath or Falstaff are, but a figure, like Sir Galahad or Prospero: the incarnation of mysterious power in the scientific age. He has no substance.

As before, the sympathetic reader's ability to put up with such presumed deficiencies does not, in itself, let the writer off the task of creating characters who cannot be exhaustively described in a single phrase. But whereas stylistic merit, as we have argued, is not vital in the field of science fiction, characterization of the traditional sort would positively weaken and deflect most of the themes that typify that field. The novelist of the main stream is expected to investigate his characters as profoundly as his equipment allows, because his business is with the subtle network of relationships connecting them. The science-fiction writer, however, takes for his subject, as Edmund Crispin has noted, the relationship between humanity on the

one side and a thing on the other, understanding by a 'thing' a wide class of phenomena: plague, invention, immortality, alien biology, or even Thing. Here several illustrations are necessary.

In *The War of the Worlds*, the 'thing' is an immensely destructive interplanetary invasion force, the theme what happens in time of unprecedented national – Wells's interest here does not extend to global – disaster. Humanity is represented chiefly by the hero-narrator, an ordinary decent Englishman of his period. If he were more or less than this he would not do. It is his function to incarnate the average reaction to the disaster, to embody what is intended by phrases like 'the nation responded magnificently' – or 'contemptibly'. A protagonist who was not ordinary, or only superficially ordinary, or finally and unexpectedly merely ordinary, or not really decent, or shiningly and supernaturally decent, etc., etc. (one or more of which he would have had to be in any corresponding novel of the main stream), would not have suited Wells's purpose, however interesting an alternative purpose might or might not have been.

Our other examples are from the present anthology. The theme of 'Mother of Invention' is adequately suggested in its title. The 'thing' is a technological problem which the five characters must solve in order to survive. The nature of the problem and the interplay of their contributions require such a number. Apart from their specialisms and the minimum of physical differentiation they are interchangeable. Of course. To have introduced individualities and conflicts – panic or indifference vs. courage, majority rule vs. authoritarianism, and so on – would again have changed the theme. 'Big Sword' presents an opposite case. Here the relationship between Dr Jordan and Ellen Scott is intrusive, distracting attention due to the 'thing'. And if it were better done – it is not badly done – it would be more destructive than it is. The science-fiction writer introduces interplay of character at his peril.

A final homely analogy. A mint julep is not a far more subtle and complex glass of bourbon, nor is a bourbon a classically simple and authoritative version of the vulgarly prettified mint julep. Such associations perhaps befit what we intend, for our

critics, as a plea for tolerance, real tolerance, nothing less than thinking again. On the part of science-fiction writers and fellow-enthusiasts, tolerance would take the form of renewed consideration of these problems, rather than a habit of irritation or complacency.

Our thanks are once more due to Messrs Bruce Montgomery and Leslie Flood for much generous help.

K.A., R.C.

STUDENT BODY

by *F. L. Wallace*

THE FIRST morning that they were fully committed to the planet, the executive officer stepped out of the ship. It was not quite dawn. Executive Hafner squinted in the early light; his eyes opened wider, and he promptly went back inside. Three minutes later, he reappeared with the biologist in tow.

'Last night you said there was nothing dangerous,' said the executive. 'Do you still think it's so?'

Dano Marin stared. 'I do.' What his voice lacked in conviction, it made up in embarrassment. He laughed uncertainly.

'This is no laughing matter. I'll talk to you later.'

The biologist stood by the ship and watched as the executive walked to the row of sleeping colonists.

'Mrs Athyl,' said the executive as he stopped beside the sleeping figure.

She yawned, rubbed her eyes, rolled over, and stood up. The covering that should have been there, however, wasn't. Neither was the garment she had on when she had gone to sleep. She assumed the conventional position of a woman who is astonished to find herself unclad without her knowledge or consent.

'It's all right, Mrs Athyl. I'm not a voyeur myself. Still, I think you should get some clothing on.' Most of the colonists were awake now. Executive Hafner turned to them. 'If you haven't any suitable clothing in the ship, the commissary will issue you some. Explanations will be given later.'

The colonists scattered. There was no compulsive modesty among them, for it couldn't have survived a year and a half in crowded spaceships. Nevertheless, it was a shock to awaken with no clothing on and not know who or what had removed it during the night. It was surprise more than anything else that disconcerted them.

On his way back to the spaceship, Executive Hafner paused. 'Any ideas about it?'

Dano Marin shrugged. 'How could I have? The planet is as new to me as it is to you.'

'Sure. But you're the biologist.'

As the only scientist in a crew of rough-and-ready colonists and builders, Marin was going to be called on to answer a lot of questions that weren't in his field.

'Nocturnal insects, most likely,' he suggested. That was pretty weak, though he knew that in ancient times locusts had stripped fields in a matter of hours. Could they do the same with the clothing of humans and not awaken them? 'I'll look into the matter. As soon as I find anything, I'll let you know.'

'Good.' Hafner nodded and went into the spaceship.

Dano Marin walked to the grove in which the colonists had been sleeping. It had been a mistake to let them bed down there, but at the time the request had been made, there had seemed no reason not to grant it. After eighteen months in crowded ships everyone naturally wanted fresh air and the rustle of leaves overhead.

Marin looked out through the grove. It was empty now; the colonists, both men and women, had disappeared inside the ship, dressing, probably.

The trees were not tall and the leaves were dark bottle-green. Occasional huge white flowers caught sunlight that made them seem larger than they were. It wasn't Earth and therefore the trees couldn't be magnolias. But they reminded Marin of magnolia trees and thereafter he always thought of them as that.

The problem of the missing clothing was ironic. Biological Survey never made a mistake – yet obviously they had. They listed the planet as the most suitable for Man of any so far discovered. Few insects, no dangerous animals, a most equitable climate. They had named it Glade because that was the word which fitted best. The whole land mass seemed to be one vast and pleasant meadow.

Evidently there were things about the planet that Biological Survey had missed.

Marin dropped to his knees and began to look for clues. If insects had been responsible, there ought to be a few dead ones, crushed, perhaps, as the colonists rolled over in their sleep. There were no insects, either live or dead.

He stood up in disappointment and walked slowly through the grove. It might be the trees. At night they could exude a vapour which was capable of dissolving the material from which the clothing had been made. Far-fetched, but not impossible. He crumbled a leaf in his hand and rubbed it against his sleeve. A pungent smell, but nothing happened. That didn't disprove the theory, of course.

He looked out through the trees at the blue sun. It was bigger than Sol, but farther away. At Glade, it was about equal to the Sun on Earth.

He almost missed the bright eyes that regarded him from the underbrush. Almost, but didn't – the domain of biology begins at the edge of the atmosphere; it includes the brush and the small creatures that live in it.

He swooped down on it. The creature fled squealing. He ran it down in the grass outside the grove. It collapsed into quaking flesh as he picked it up. He talked to it gently and the terror subsided.

It nibbled contentedly on his jacket as he carried it back to the ship.

Executive Hafner stared unhappily at the cage. It was an undistinguished animal, small and something like an undeveloped rodent. Its fur was sparse and stringy, unglamorous; it would never be an item in the fur export trade.

'Can we exterminate it?' asked Hafner. 'Locally, that is.'

'Hardly. It's ecologically basic.'

The executive looked blank. Dano Marin added the explanation: 'You know how Biological Control works. As soon as a planet has been discovered that looks suitable, they send out a survey ship loaded with equipment. The ship flies low over a good part of the planet and the instruments in the ship record the neural currents of the animals below. The instruments can distinguish the characteristic neural patterns of anything that has a brain, including insects.

'Anyway, they have a pretty good idea of the kinds of animals on the planet and their relative distribution. Naturally, the survey party takes a few specimens. They have to in order to correlate the pattern with the actual animal, otherwise the neural pattern would be merely a meaningless squiggle on a microfilm.

'The survey shows that this animal is one of only four species of mammals on the planet. It is also the most numerous.'

Hafner grunted. 'So if we kill them off here, others will swarm in from surrounding areas?'

'That's about it. There are probably millions of them on this peninsula. Of course, if you want to put a barrier across the narrow connection to the mainland, you might be able to wipe them out locally.'

The executive scowled. A barrier was possible, but it would involve more work than he cared to expend.

'What do they eat?' he asked truculently.

'A little bit of everything, apparently. Insects, fruits, berries, nuts, succulents, and grain.' Dano Marin smiled. 'I guess it could be called an omnivore – now that our clothing is handy, it eats that, too.'

Hafner didn't smile. 'I thought our clothing was supposed to be verminproof.'

Marin shrugged. 'It is, on twenty-seven planets. On the twenty-eighth, we meet up with a little fella that has better digestive fluids, that's all.'

Hafner looked pained. 'Are they likely to bother the crops we plant?'

'Offhand, I would say they aren't. But then I would have said the same about our clothing.'

Hafner made up his mind. 'All right. You worry about the crops. Find some way to keep them out of the fields. Meanwhile, everyone sleeps in the ship until we can build dormitories.'

Individual dwelling units would have been more appropriate in the colony at this stage, thought Marin. But it wasn't for him to decide. The executive was a man who regarded a schedule as something to be exceeded.

'The omnivore—' began Marin.

Hafner nodded impatiently. 'Work on it,' he said, and walked away.

The biologist sighed. The omnivore really was a queer little creature, but it was by no means the most important thing on Glade. For instance, why were there so few species of land animals on the planet? No reptiles, numerous birds, and only four kinds of mammals.

Every comparable planet teemed with a wild variety of life. Glade, in spite of seemingly ideal conditions, hadn't developed. Why?

He had asked Biological Controls for this assignment because it had seemed an interesting problem. Now, apparently, he was being pressed into service as an exterminator.

He reached in the cage and picked up the omnivore. Mammals on Glade were not unexpected. Parallel development took care of that. Given roughly the same kind of environment, similar animals would usually evolve.

In the Late Carboniferous forest on Earth, there had been creatures like the omnivore, the primitive mammal from which all others had evolved. On Glade, that kind of evolution just hadn't taken place. What had kept nature from exploiting its evolutionary potentialities? There was the real problem, not how to wipe them out.

Marin stuck a needle in the omnivore. It squealed and then relaxed. He drew out the blood and set it back in the cage. He could learn a lot about the animal from trying to kill it.

The quartermaster was shouting, though his normal voice carried quite well.

'How do you know it's mice?' the biologist asked him.

'Look,' said the quartermaster angrily.

Marin looked. The evidence did indicate mice.

Before he could speak, the quartermaster snapped, 'Don't tell me they're only micelike creatures. I know that. The question is: how can I get rid of them?'

'Have you tried poison?'

'Tell me what poison to use and I'll use it.'

It wasn't the easiest question to answer. What was poisonous

to an animal he had never seen and knew nothing about? According to Biological Survey, the animal didn't exist.

It was unexpectedly serious. The colony could live off the land, and was expected to. But another group of colonists was due in three years. The colony was supposed to accumulate a surplus of food to feed the increased numbers. If they couldn't store the food they grew any better than the concentrates, that surplus was going to be scanty.

Marin went over the warehouse thoroughly. It was the usual early construction on a colonial world. Not aesthetic, it was sturdy enough. Fused dirt floor, reinforced foot-thick walls, a ceiling slab of the same. The whole was bound together with a molecular cement that made it practically airtight. It had no windows; there were two doors. Certainly it should keep out rodents.

A closer examination revealed an unexpected flaw. The floor was as hard as glass; no animal could gnaw through it, but, like glass, it was also brittle. The crew that had built the warehouse had evidently been in such a hurry to get back to Earth that they hadn't been as careful as they should have been, for here and there the floor was thin. Somewhere under the heavy equipment/piled on it, the floor had cracked. There a burrowing animal had means of entry.

Short of building another warehouse, it was too late to do anything about that. Micelike animals were inside and had to be controlled where they were.

The biologist straightened up. 'Catch me a few of them alive and I'll see what I can do.'

In the morning, a dozen live specimens were delivered to the lab. They actually did resemble mice.

Their reactions were puzzling. No two of them were affected by the same poison. A compound that stiffened one in a matter of minutes left the others hale and hearty, and the poison he had developed to control the omnivores was completely ineffective.

The depredations in the warehouse went on. Black mice, white ones, grey and brown, short-tailed and long-eared, or the reverse, they continued to eat the concentrates and spoil what they didn't eat.

Marin conferred with the executive, outlined the problem as he saw it and his ideas on what could be done to combat the nuisance.

'But we can't build another warehouse,' argued Hafner. 'Not until the atomic generator is set up, at any rate. And then we'll have other uses for the power.' The executive rested his head in his hands. 'I like the other solution better. Build one and see how it works.'

'I was thinking of three,' said the biologist.

'One,' Hafner insisted. 'We can't spare the equipment until we know how it works.'

At that he was probably right. They had equipment, as much as three ships could bring. But the more they brought, the more was expected of the colony. The net effect was that equipment was always in short supply.

Marin took the authorization to the engineer. On the way, he privately revised his specifications upward. If he couldn't get as many as he wanted, he might as well get a better one.

In two days, the machine was ready.

It was delivered in a small crate to the warehouse. The crate was opened and the machine leaped out and stood there, poised.

'A cat!' exclaimed the quartermaster, pleased. He stretched out his hand towards the black fuzzy robot.

'If you've touched anything a mouse may have, get your hand away,' warned the biologist. 'It reacts to smell as well as sight and sound.'

Hastily, the quartermaster withdrew his hand. The robot disappeared silently into the maze of stored material.

In one week, though there were still some mice in the warehouse, they were no longer a danger.

The executive called Marin into his office, a small sturdy building located in the centre of the settlement. The colony was growing, assuming an aspect of permanency. Hafner sat in his chair and looked out over that growth with satisfaction.

'A good job on the mouse plague,' he said.

The biologist nodded. 'Not bad, except there shouldn't be any mice here. Biological Survey—'

'Forget it,' said the exec. 'Everybody makes mistakes, even

B.S.' He leaned back and looked seriously at the biologist. 'I have a job I need done. Just now I'm short of men. If you have no objections . . .'

The exec was always short of men, would be until the planet was overcrowded, and he would try to find someone to do the work his own men should have done. Dano Marin was not directly responsible to Hafner; he was on loan to the expedition from Biological Controls. Still, it was a good idea to cooperate with the executive. He sighed.

'It's not as bad as you think,' said Hafner, interpreting the sound correctly. He smiled. 'We've got the digger together. I want you to run it.'

Since it tied right in with his investigations, Dano Marin looked relieved and showed it.

'Except for food, we have to import most of our supplies,' Hafner explained. 'It's a long haul, and we've got to make use of everything on the planet we can. We need oil. There are going to be a lot of wheels turning, and every one of them will have to have oil. In time we'll set up a synthetic plant, but if we can locate a productive field now, it's to our advantage.'

'You're assuming the geology of Glade is similar to Earth?'

Hafner waggled his hand. 'Why not? It's a nicer twin of Earth.'

Why not? Because you couldn't always tell from the surface, thought Marin. It *seemed* like Earth, but was it? Here was a good chance to find out the history of Glade.

Hafner stood up. 'Any time you're ready, a technician will check you out on the digger. Let me know before you go.'

Actually, the digger wasn't a digger. It didn't move or otherwise displace a gram of dirt or rock. It was a means of looking down below the surface, to any practical depth. A large crawler, it was big enough for a man to live in without discomfort for a week.

It carried an outsize ultra-sonic generator and a device for directing the beam into the planet. That was the sending apparatus. The receiving end began with a large sonic lens which picked up sound beams reflected from any desired depth,

converted it into electrical energy and thence into an image which was flashed on to a screen.

At the depth of ten miles, the image was fuzzy, though good enough to distinguish the main features of the strata. At three miles, it was better. It could pick up the sound reflection of a buried coin and convert it into a picture on which the date could be seen.

It was to a geologist as a microscope is to a biologist. Being a biologist, Dano Marin could appreciate the analogy.

He started at the tip of the peninsula and zigzagged across, heading towards the isthmus. Methodically, he covered the territory, sleeping at night in the digger. On the morning of the third day, he discovered oil traces, and by that afternoon he had located the main field.

He should probably have turned back at once, but now that he had found oil, he investigated more deliberately. Starting at the top, he let the image range downwards below the top strata.

It was the reverse of what it should have been. In the top few feet, there were plentiful fossil remains, mostly of the four species of mammals. The squirrel-like creature and the far larger grazing animal were the forest dwellers. Of the plains animals, there were only two, in size fitting neatly between the extremes of the forest dwellers.

After the first few feet, which corresponded to approximately twenty thousand years, he found virtually no fossils. Not until he reached a depth which he could correlate to the Late Carboniferous age on Earth did fossils reappear. Then they were of animals appropriate to the epoch. At that depth and below, the history of Glade was quite similar to Earth's.

Puzzled, he checked again in a dozen widely scattered localities. The results were always the same – fossil history for the first twenty thousand years, then none for roughly a hundred million. Beyond that, it was easy to trace the thread of biological development.

In that period of approximately one hundred million years, something unique had happened to Glade. What was it?

On the fifth day his investigations were interrupted by the sound of the keyed-on radio.

'Marin.'
'Yes?' He flipped on the sending switch.
'How soon can you get back?'
He looked at the photo-map. 'Three hours. Two if I hurry.'
'Make it two. Never mind the oil.'
'I've found oil. But what's the matter?'
'You can see it better than I can describe it. We'll discuss it when you get back.'

Reluctantly, Marin retracted the instruments into the digger. He turned it around and, with not too much regard for the terrain, let it roar. The treads tossed dirt high in the air. Animals fled squealing from in front of him. If the grove was small enough, he went around it, otherwise he went through and left matchsticks behind.

He skidded the crawler ponderously to a halt near the edge of the settlement. The centre of activity was the warehouse. Pick-ups wheeled in and out, transferring supplies to a cleared area outside. He found Hafner in a corner of the warehouse, talking to the engineer.

Hafner turned around when he came up. 'Your mice have grown, Marin.'

Marin looked down. The robot cat lay on the floor. He knelt and examined it. The steel skeleton hadn't broken; it had been bent, badly. The tough plastic skin had been torn off and, inside, the delicate mechanism had been chewed into an unrecognizable mass.

Around the cat were rats, twenty or thirty of them, huge by any standards. The cat had fought; the dead animals were headless or disembowelled, unbelievably battered. But the robot had been outnumbered.

Biological Survey had said there weren't any rats on Glade. They had also said that about mice. What was the key to their error?

The biologist stood up. 'What are you going to do about it?'

'Build another warehouse, two-foot-thick fused dirt floors, monolithic construction. Transfer all perishables to it.'

Marin nodded. That would do it. It would take time, of course, and power, all they could draw out of the recently set

up atomic generator. All other construction would have to be suspended. No wonder Hafner was disturbed.

'Why not build more cats?' Marin suggested.

The executive smiled nastily. 'You weren't here when we opened the doors. The warehouse was swarming with rats. How many robot cats would we need – five, fifteen? I don't know. Anyway the engineer tells me we have enough parts to build three more cats. The one lying there can't be salvaged.'

It didn't take an engineer to see that, thought Marin.

Hafner continued, 'If we need more, we'll have to rob the computer in the spaceship. I refuse to permit that.'

Obviously he would. The spaceship was the only link with Earth until the next expedition brought more colonists. No exec in his right mind would permit the ship to be crippled.

But why had Hafner called him back? Merely to keep him informed of the situation?

Hafner seemed to guess his thoughts. 'At night we'll floodlight the supplies we remove from the warehouse. We'll post a guard armed with decharged rifles until we can move the food into the new warehouse. That'll take about ten days. Meanwhile, our fast crops are ripening. It's my guess the rats will turn to them for food. In order to protect our future food supply, you'll have to activate your animals.'

The biologist started. 'But it's against regulations to loose any animal on a planet until a complete investigation of the possible ill effects is made.'

'That takes ten or twenty years. This is an emergency and I'll be responsible – in writing, if you want.'

The biologist was effectively countermanded. Another rabbit-infested Australia or the planet that the snails took over might be in the making, but there was nothing he could do about it.

'I hardly think they'll be of any use against rats this size,' he protested.

'You've got hormones. Apply them.' The executive turned and began discussing construction with the engineer.

Marin had the dead rats gathered up and placed in the freezer for further study.

After that, he retired to the laboratory and worked out a

course of treatment for the domesticated animals that the colonists had brought with them. He gave them the first injections and watched them carefully until they were safely through the initial shock phase of growth. As soon as he saw they were going to survive, he bred them.

Next he turned to the rats. Of note was the wide variation in size. Internally, the same thing was true. They had the usual organs, but the proportions of each varied greatly, more than is normal. Nor were their teeth uniform. Some carried huge fangs set in delicate jaws; others had tiny teeth that didn't match the massive bone structure. As a species, they were the most scrambled the biologist had ever encountered.

He turned the microscope on their tissues and tabulated the results. There was less difference here between individual specimens, but it was enough to set him pondering. The reproductive cells were especially baffling.

Late in the day, he felt rather than heard the soundless whoosh of the construction machinery. He looked out of the laboratory and saw smoke rolling upwards. As soon as the vegetation was charred, the smoke ceased and heat waves danced into the sky.

They were building on a hill. The little creatures that crept and crawled in the brush attacked in the most vulnerable spot, the food supply. There was no brush, not a blade of grass, on the hill when the colonists finished.

Terriers. In the past, they were the hunting dogs of the agricultural era. What they lacked in size they made up in ferocity towards rodents. They had earned their keep originally in granaries and fields, and, for a brief time, they were doing it again on colonial worlds where conditions were repeated.

The dogs the colonists brought had been terriers. They were still as fast, still with th*o* same anti-rodent disposition, but they were no longer small. It had been a difficult job, yet Marin had done it well, for the dogs had lost none of their skill and speed in growing to the size of a great dane.

The rats moved in on the fields of fast crops. Fast crops were made to order for a colonial world. They could be planted, grown, and harvested in a matter of weeks. After four such

plantings, the fertility of the soil was destroyed, but that meant nothing in the early years of a colonial planet, for land was plentiful.

The rat tide grew in the fast crops, and the dogs were loosed on the rats. They ranged through the fields, hunting. A rush, a snap of their jaws, the shake of a head, and the rat was tossed aside, its back broken. The dogs went on to the next.

Until they could not see, the dogs prowled and slaughtered. At night they came in bloody, most of it not their own, and exhausted. Marin pumped them full of antibiotics, bandaged their wounds, fed them through their veins, and shot them into sleep. In the morning he awakened them with an injection of stimulant and sent them tingling into battle.

It took the rats two days to learn they could not feed during the day. Not so numerous, they came at night. They climbed on the vines and nibbled the fruit. They gnawed growing grain and ravaged vegetables.

The next day the colonists set up lights. The dogs were with them, discouraging the few rats who were still foolish enough to forage while the sun was overhead.

An hour before dusk, Marin called the dogs in and gave them an enforced rest. He brought them out of it after dark and took them to the fields, staggering. The scent of rats revived them; they were as eager as ever, if not quite so fast.

The rats came from the surrounding meadows, not singly, or in twos and threes, as they had before; this time they came together. Squealing and rustling the grass, they moved towards the fields. It was dark, and though he could not see them, Marin could hear them. He ordered the great lights turned on in the area of the fields.

The rats stopped under the glare, milling around uneasily. The dogs quivered and whined. Marin held them back. The rats resumed their march, and Marin released the dogs.

The dogs charged in to attack, but didn't dare brave the main mass. They picked off the stragglers and forced the rats into a tighter formation. After that the rats were virtually unassailable.

The colonists could have burned the bunched-up rats with the right equipment, but they didn't have it and couldn't get

it for years. Even if they'd had it, the use of such equipment would endanger the crops, which they had to save if they could. It was up to the dogs.

The rat formation came to the edge of the fields, and broke. They could face a common enemy and remain united, but in the presence of food, they forgot that unity and scattered – hunger was the great divisor. The dogs leaped joyously in pursuit. They hunted down the starved rodents, one by one, and killed them as they ate.

When daylight came, the rat menace had ended.

The next week the colonists harvested and processed the food for storage and immediately planted another crop.

Marin sat in the lab and tried to analyse the situation. The colony was moving from crisis to crisis, all of them involving food. In itself, each critical situation was minor, but lumped together they could add up to failure. No matter how he looked at it, they just didn't have the equipment they needed to colonize Glade.

The fault seemed to lie with Biological Survey; they hadn't reported the presence of pests that were endangering the food supply. Regardless of what the exec thought about them, Survey knew their business. If they said there were no mice or rats on Glade, then there hadn't been any – *when the survey was made.*

The question was: when did they come and how did they get here?

Marin sat and stared at the wall, turning over hypotheses in his mind, discarding them when they failed to make sense.

His gaze shifted from the wall to the cage of the omnivores, the squirrel-size forest creature. The most numerous animal on Glade, it was a commonplace sight to the colonists.

And yet it was a remarkable animal, more than he had realized. Plain, insignificant in appearance, it might be the most important of any animal Man had encountered on the many worlds he had settled on. The longer he watched, the more Marin became convinced of it.

He sat silent, observing the creature, not daring to move. He sat until it was dark and the omnivore resumed its normal activity.

Normal? The word didn't apply on Glade.

The interlude with the omnivore provided him with one answer. He needed another one; he thought he knew what it was, but he had to have more data, additional observations.

He set up his equipment carefully on the fringes of the settlement. There and in no other place existed the information he wanted.

He spent time in the digger, checking his original investigations. It added up to a complete picture.

When he was certain of his facts, he called on Hafner.

The executive was congenial; it was a reflection of the smoothness with which the objectives of the colony were being achieved.

'Sit down,' he said affably. 'Smoke?'

The biologist sat down and took a cigarette.

'I thought you'd like to know where the mice came from,' he began.

Hafner smiled. 'They don't bother us any more.'

'I've also determined the origin of the rats.'

'They're under control. We're doing nicely.'

On the contrary, thought Marin. He searched for the proper beginning.

'Glade has an Earth-type climate and topography,' he said. 'Has had for the past twenty thousand years. Before that, about a hundred million years ago, it was also like Earth of the comparable period.'

He watched the look of polite interest settle on the executive's face as he stated the obvious. Well, it *was* obvious, up to a point. The conclusions weren't, though.

'Between a hundred million years and twenty thousand years ago, something happened to Glade,' Marin went on. 'I don't know the cause; it belongs to cosmic history and we may never find out. Anyway, whatever the cause – fluctuations in the sun, unstable equilibrium of forces within the planet, or perhaps an encounter with an interstellar dust cloud of variable density – the climate on Glade changed.

'It changed with inconceivable violence and it kept on changing. A hundred million years ago, plus or minus, there was carboniferous forest on Glade. Giant reptiles resembling

dinosaurs and tiny mammals roamed through it. The first great change wiped out the dinosaurs, as it did on Earth. It didn't wipe out the still more primitive ancestor of the omnivore, because it could adapt to changing conditions.

'Let me give you an idea how the conditions changed. For a few years a given area would be a desert; after that it would turn into a jungle. Still later a glacier would begin to form. And then the cycle would be repeated, with wild variations. All this might happen – did happen – within a span covered by the lifetime of a single omnivore. This occurred many times. For roughly a hundred million years, it was the norm of existence on Glade. This condition was hardly conducive to the preservation of fossils.'

Hafner saw the significance and was concerned. 'You mean these climatic fluctuations suddenly stopped, twenty thousand years ago? Are they likely to begin again?'

'I don't know,' confessed the biologist. 'We can probably determine it if we're interested.'

The exec nodded grimly. 'We're interested, all right.'

Maybe we are, thought the biologist. He said, 'The point is that survival was difficult. Birds could and did fly to more suitable climates; quite a few of them survived. Only one species of mammals managed to come through.'

'Your facts are not straight,' observed Hafner. 'There are four species, ranging in size from a squirrel to a water buffalo.'

'One species,' Marin repeated doggedly. 'They're the same. If the food supply for the largest animal increases, some of the smaller so-called species grow up. Conversely, if food becomes scarce in any category, the next generation, which apparently can be produced almost instantly, switches to a form which does have an adequate food supply.'

'The mice,' Hafner said slowly.

Marin finished the thought for him. 'The mice weren't here when we got here. They were born of the squirrel-size omnivore.'

Hafner nodded. 'And the rats?'

'Born of the next larger size. After all, we're environment, too -- perhaps the harshest the beasts have yet faced.'

Hafner was a practical man, trained to administer a colony.

Concepts were not his familiar ground. 'Mutations, then? But I thought—'

The biologist smiled. It was thin and cracked at the edges of his mouth. 'On Earth, it would be mutation. Here it is merely normal evolutionary adaptation.' He shook his head. 'I never told you, but omnivores, though they could be mistaken for an animal from Earth, have no genes or chromosomes. Obviously they do have heredity, but how it is passed down, I don't know. However it functions, it responds to external conditions far faster than anything we've ever encountered.'

Hafner nodded to himself. 'Then we'll never be free from pests.' He clasped and unclasped his hands. 'Unless, of course, we rid the planet of all animal life.'

'Radioactive dust?' asked the biologist. 'They have survived worse.'

The exec considered alternatives. 'Maybe we should leave the planet and leave it to the animals.'

'Too late,' said the biologist. 'They'll be on Earth, too, and all the planets we've settled on.'

Hafner looked at him. The same pictures formed in his mind that Marin had thought of. Three ships had been sent to colonize Glade. One had remained with the colonists, survival insurance in case anything unforeseen happened. Two had gone back to Earth to carry the report that all was well and that more supplies were needed. They had also carried specimens from the planet.

The cages those creatures were kept in were secure. But a smaller species could get out, must already be free, inhabiting, undetected, the cargo spaces of the ships.

There was nothing they could do to intercept those ships. And once they reached Earth, would the biologists suspect? Not for a long time. First a new kind of rat would appear. A mutation could account for that. Without specific knowledge, there would be nothing to connect it with the specimens picked up from Glade.

'We have to stay,' said the biologist. 'We have to study them and we can do it best here.'

He thought of the vast complex of buildings on Earth. There was too much invested to tear them down and make them

verminproof. Billions of people could not be moved off the planet while the work was being done.

They were committed to Glade not as a colony, but as a gigantic laboratory. They had gained one planet and lost the equivalent of ten, perhaps more when the destructive properties of the omnivores were finally assessed.

A rasping animal cough interrupted the biologist's thoughts. Hafner jerked his head and glanced out of the window. Lips tight, he grabbed a rifle off the wall and ran out. Marin followed him.

The exec headed towards the fields where the second fast crop was maturing. On top of a knoll, he stopped and knelt. He flipped the dial to *extreme charge*, aimed, and fired. It was high; he missed the animal in the field. A neat strip of smoking brown appeared in the green vegetation.

He aimed more carefully and fired again. The charge screamed out of the muzzle. It struck the animal on the forepaw. The beast leaped high in the air and fell down, dead and broiled.

They stood over the animal Hafner had killed. Except for the lack of markings, it was a good imitation of a tiger. The exec prodded it with his toe.

'We chase the rats out of the warehouse and they go to the fields,' he muttered. 'We hunt them down in the fields with dogs and they breed tigers.'

'Easier than rats,' said Marin. 'We can shoot tigers.' He bent down over the slain dog near which they had surprised the big cat.

The other dog came whining from the far corner of the field to which he had fled in terror. He was a courageous dog, but he could not face the great carnivore. He whimpered and licked the face of his mate.

The biologist picked up the mangled dog and headed towards the laboratory.

'You can't save her,' said Hafner morosely. 'She's dead.'

'But the pups aren't. We'll need them. The rats won't disappear merely because tigers have showed up.'

The head drooped limply over his arm and blood seeped into his clothing as Hafner followed him up the hill.

'We've been here three months,' the exec said suddenly. 'The dogs have been in the fields only two. And yet the tiger was mature. How do you account for something like that?'

Marin bent under the weight of the dog. Hafner never would understand his bewilderment. As a biologist, all his categories were upset. What did evolution explain? It was a history of organic life on a particular world. Beyond that world, it might not apply.

Even about himself there were many things Man didn't know, dark patches in his knowledge which theory simply had to pass over. About other creatures, his ignorance was sometimes limitless.

Birth was simple; it occurred on countless planets. Meek grazing creatures, fierce carnivores – the most unlikely animals gave birth to their young. It happened all the time. And the young grew up, became mature and mated.

He remembered that evening in the laboratory. It was accidental – what if he had been elsewhere and not witnessed it? They would not know what little they did.

He explained it carefully to Hafner. 'If the survival factor is high and there's a great disparity in size, the young need not ever be young. They may be born as fully functioning adults!'

Although not at the rate it had initially set, the colony progressed. The fast crops were slowed down and a more diversified selection was planted. New buildings were constructed and the supplies that were stored in them were spread out thin, for easy inspection.

The pups survived and within a year shot up to maturity. After proper training, they were released to the fields where they joined the older dogs. The battle against the rats went on; they were held in check, though the damage they caused was considerable.

The original animal, unchanged in form, developed an appetite for electrical insulation. There was no protection except to keep the power on at all times. Even then there were unwelcome interruptions until the short was located and the charred carcass was removed. Vehicles were kept tightly closed

or parked only in verminproof buildings. While the plague didn't increase in numbers, it couldn't be eliminated, either.

There was a flurry of tigers, but they were larger animals and were promptly shot down. They prowled at night, so the colonists were assigned to guard the settlement around the clock. Where lights failed to reach, the infra-red 'scope did. As fast as they came, the tigers died. Except for the first one, not a single dog was lost.

The tigers changed, though not in form. Externally, they were all big and powerful killers. But as the slaughter went on, Marin noticed one astonishing fact – the internal organic structure became progressively more immature.

The last one that was brought to him for examination was the equivalent of a newly born cub. That tiny stomach was suited more for the digestion of milk than meat. How it had furnished energy to drive those great muscles was something of a miracle. But drive it had, for a murderous fifteen minutes before the animal was brought down. No lives were lost, though sick bay was kept busy for a while.

That was the last tiger they shot. After that, the attacks ceased.

The seasons passed and nothing new occurred. A spaceship civilization or even that fragment of it represented by the colony was too much for the creature, which Marin by now had come to think of as the 'Omnimal.' It had evolved out of a cataclysmic past, but it could not meet the challenge of the harshest environment.

Or so it seemed.

Three months before the next colonists were due, a new animal was detected. Food was missing from the fields. It was not another tiger: they were carnivorous. Nor rats, for vines were stripped in a manner that no rodent could manage.

The food was not important. The colony had enough in storage. But if the new animal signalled another plague, it was necessary to know how to meet it. The sooner they knew what the animal was, the better defence they could set up against it.

Dogs were useless. The animal roamed the field they were

loose in, and they did not attack nor even seem to know it was there.

The colonists were called upon for guard duty again, but it evaded them. They patrolled for a week and they still did not catch sight of it.

Hafner called them in and rigged up an alarm system in the field most frequented by the animal. It detected that, too, and moved its sphere of operations to a field in which the alarm system had not been installed.

Hafner conferred with the engineer, who devised an alarm that would react to body radiation. It was buried in the original field and the old alarm was moved to another.

Two nights later, just before dawn, the alarm rang.

Marin met Hafner at the edge of the settlement. Both carried rifles. They walked; the noise of any vehicle was likely to frighten the animal. They circled around and approached the field from the rear. The men in the camp had been alerted. If they needed help, it was ready.

They crept silently through the underbrush. It was feeding in the field, not noisily, yet they could hear it. The dogs hadn't barked.

They inched nearer. The blue sun of Glade came up and shone full on their quarry. The gun dropped in Hafner's hand. He clenched his teeth and raised it again.

Marin put out a restraining arm. 'Don't shoot,' he whispered.

'I'm the exec here. I say it's dangerous.'

'Dangerous,' agreed Marin, still in a whisper. 'That's why you can't shoot. It's more dangerous than you know.'

Hafner hesitated and Marin went on. 'The omnimal couldn't compete in the changed environment and so it evolved mice. We stopped the mice and it countered with rats. We turned back the rat and it provided the tiger.

'The tiger was easiest of all for us and so it was apparently stopped for a while. But it didn't really stop. Another animal was being formed, the one you see there. It took the omnimal two years to create it – how, I don't know. A million years were required to evolve it on Earth.'

Hafner hadn't lowered the rifle and he showed no signs of doing so. He looked lovingly into the sights.

'Can't you see?' urged Marin. 'We can't destroy the omnimal. It's on Earth now, and on the other planets, down in the storage areas of our big cities, masquerading as rats. And we've never been able to root out even our own terrestrial rats, so how can we exterminate the omnimal?'

'All the more reason to start now.' Hafner's voice was flat.

Marin struck the rifle down. 'Are their rats better than ours?' he asked wearily. 'Will their pests win or ours be stronger? Or will the two make peace, unite and interbreed, make war on us? It's not impossible; the omnimal could do it if interbreeding had a high survival factor.

'Don't you still see? There is a progression. After the tiger, it bred this. If this evolution fails, if we shoot it down, what will it create next? This creature I think we can compete with. *It's the one after this that I do not want to face.*'

It heard them. It raised its head and looked around. Slowly it edged away and backed towards a nearby grove.

The biologist stood up and called softly. The creature scurried to the trees and stopped just inside the shadows among them.

The two men laid down their rifles. Together they approached the grove, hands spread open to show they carried no weapons.

It came out to meet them. Naked, it had had no time to learn about clothing. Neither did it have weapons. It plucked a large white flower from the tree and extended this mutely as a sign of peace.

'I wonder what it's like,' said Marin. 'It seems adult, but can it be, all the way through? What's inside that body?'

'I wonder what's in his head,' Hafner said worriedly.

It looked very much like a man.

CRUCIFIXUS ETIAM

by *Walter M. Miller*

MANUE NANTI joined the project to make some dough. Five dollars an hour was good pay, even in AD 2134, and there was no way to spend it while on the job. Everything would be furnished: housing, chow, clothing, toiletries, medicine, cigarettes, even a daily ration of one hundred eighty proof beverage alcohol, locally distilled from fermented Martian mosses as fuel for the project's vehicles. He figured that if he avoided crap games, he could finish his five-year contract with fifty thousand dollars in the bank, return to Earth, and retire at the age of twenty-four. Manue wanted to travel, to see the far corners of the world, the strange cultures, the simple people, the small towns, deserts, mountains, jungles – for until he came to Mars, he had never been farther than a hundred miles from Cerro de Pasco, his birthplace in Peru.

A great wistfulness came over him in the cold Martian night when the frost haze broke, revealing the black, gleam-stung sky, and the blue-green Earth-star of his birth. *El mundo de mi carne, de mi alma,* he thought – yet, he had seen so little of it that many of its places would be more alien to him than the homogenously ugly vistas of Mars. These he longed to see: the volcanoes of the South Pacific, the monstrous mountains of Tibet, the concrete cyclops of New York, the radioactive craters of Russia, the artificial islands in the China Sea, the Black Forest, the Ganges, the Grand Canyon – but most of all, the works of human art: the pyramids, the Gothic cathedrals of Europe, *Notre Dame du Chartres,* Saint Peter's, the tile-work wonders of Anacapri. But the dream was still a long labour from realization.

Manue was a big youth, heavy-boned and built for labour, clever in a simple mechanical way, and with a wistful good humour that helped him take a lot of guff from whisky-breathed

foremen and sharp-eyed engineers who made ten dollars an hour and figured ways for making more, legitimately or otherwise.

He had been on Mars only a month, and it hurt. Each time he swung the heavy pick into the red-brown sod, his face winced with pain. The plastic aerator valves, surgically stitched in his chest, pulled and twisted and seemed to tear with each lurch of his body. The mechanical oxygenator served as a lung, sucking blood through an artificially grafted network of veins and plastic tubing, frothing it with air from a chemical generator, and returning it to his circulatory system. Breathing was unnecessary, except to provide wind for talking, but Manue breathed in desperate gulps of the 4·0 psi Martian air; for he had seen the wasted, atrophied chests of the men who had served four or five years, and he knew that when they returned to Earth – if ever – they would still need the auxiliary oxygenator equipment.

'If you don't stop breathing,' the surgeon told him, 'you'll be all right. When you go to bed at night, turn the oxy down low – so you feel like panting. There's a critical point that's just right for sleeping. If you get it too low, you'll wake up screaming, and you'll get claustrophobia. If you get it too high, your reflex mechanisms will go to pot and you won't breathe; your lungs'll dry up after a time. Watch it.'

Manue watched it carefully, although the oldsters laughed at him – in their dry wheezing chuckles. Some of them could scarcely speak more than two or three words at a shallow breath.

'Breathe deep, boy', they told him. 'Enjoy it while you can. You'll forget how pretty soon. Unless you're an engineer.'

The engineers had it soft, he learned. They slept in a pressurized barracks where the air was ten psi and twenty-five per cent oxygen, where they turned their oxies off and slept in peace. Even their oxies were self-regulating, controlling the output according to the carbon dioxide content of the input blood. But the Commission could afford no such luxuries for the labour gangs. The payload of a cargo rocket from Earth was only about two per cent of the ship's total mass, and nothing superfluous could be carried. The ships brought the bare essentials, basic

industrial equipment, big reactors, generators, engines, heavy tools.

Small tools, building materials, foods, non-nuclear fuels – these things had to be made on Mars. There was an open pit mine in the belly of Syrtis Major where a 'lake' of nearly pure iron-rust was scooped into smelter, and processed into various grades of steel for building purposes, tools, and machinery. A quarry in the Flathead Mountains dug up large quantities of cement rock, burned it and crushed it to make concrete.

It was rumoured that Mars was even preparing to grow her own labour force. An old-timer told him that the Commission had brought five hundred married couples to a new underground city in the Mare Erythraeum, supposedly as personnel for a local commission headquarters, but according to the old-timer, they were to be paid a bonus of three thousand dollars for every child born on the red planet. But Manue knew that the old 'troffies' had a way of inventing such stories, and he reserved a certain amount of scepticism.

As for his own share in the Project, he knew – and needed to know – very little. The encampment was at the north end of the Mare Cimmerium, surrounded by the bleak brown and green landscape of rock and giant lichens, stretching towards sharply defined horizons except for one mountain range in the distance, and hung over by a blue sky so dark that the Earth-star occasionally became dimly visible during the dim daytime. The encampment consisted of a dozen double-walled stone huts, windowless, and roofed with flat slabs of rock covered over by a tarry resin boiled out of the cactuslike spineplants. The camp was ugly, lonely, and dominated by the gaunt skeleton of a drill rig set up in its midst.

Manue joined the excavating crew in the job of digging a yard-wide, six feet deep foundation trench in a hundred yard square around the drill rig, which day and night was biting deeper through the crust of Mars in a dry cut that necessitated frequent stoppages for changing rotary bits. He learned that the geologists had predicted a subterranean pocket of tritium oxide ice at sixteen thousand feet, and that it was for this that they were drilling. The foundation he was helping to dig would be for a control station of some sort.

He worked too hard to be very curious. Mars was a nightmare, a grim, womanless, frigid, disinterestedly evil world. His digging partner was a sloe-eyed Tibetan nicknamed 'Gee' who spoke the Omnalingua clumsily at best. He followed two paces behind Manue with a shovel, scooping up the broken ground, and humming a monotonous chant in his own tongue. Manue seldom heard his own language, and missed it; one of the engineers, a haughty Chilean, spoke the modern Spanish, but not to such as Manue Nanti. Most of the other labourers used either Basic English or the Omnalingua. He spoke both, but longed to hear the tongue of his people. Even when he tried to talk to Gee, the cultural gulf was so wide that satisfying communication was nearly impossible. Peruvian jokes were unfunny to Tibetan ears, although Gee bent double with gales of laughter when Manue nearly crushed his own foot with a clumsy stroke of the pick.

He found no close companions. His foreman was a narrow-eyed, orange-browed Low German named Vögeli, usually half-drunk, and intent upon keeping his lung-power by bellowing at his crew. A meaty, florid man, he stalked slowly along the lip of the excavation, pausing to stare coldly down at each pair of labourers who, if they dared to look up, caught a guttural tongue-lashing for the moment's pause. When he had words for a digger, he called a halt by kicking a small avalanche of dirt back into the trench about the man's feet.

Manue learned about Vögeli's disposition before the end of his first month. The aerator tubes had become nearly unbearable; the skin, in trying to grow fast to the plastic, was beginning to form a tight little neck where the tubes entered his flesh, and the skin stretched and burned and stung with each movement of his trunk. Suddenly he felt sick. He staggered dizzily against the side of the trench, dropped the pick, and swayed heavily, bracing himself against collapse. Shock and nausea rocked him, while Gee stared at him and giggled foolishly.

'Hoy!' Vögeli bellowed from across the pit. 'Get back on that pick! Hoy, there! Get with it—'

Manue moved dizzily to recover the tool, saw patches of black swimming before him, sank weakly back to pant in

shallow gasps. The nagging sting of the valves was a portable hell that he carried with him always. He fought an impulse to jerk them out of his flesh; if a valve came loose, he would bleed to death in a few minutes.

Vögeli came stamping along the heap of fresh earth and lumbered up to stand over the sagging Manue in the trench. He glared down at him for a moment, then nudged the back of his neck with a heavy boot. 'Get to work!'

Manue looked up and moved his lips silently. His forehead glinted with moisture in the faint sun, although the temperature was far below freezing.

'Grab that pick and get started.'

'Can't,' Manue gasped. 'Hoses – hurt.'

Vögeli grumbled a curse and vaulted down into the trench beside him. 'Unzip that jacket,' he ordered.

Weakly, Manue fumbled to obey, but the foreman knocked his hand aside and jerked the zipper down. Roughly he unbuttoned the Peruvian's shirt, laying open the bare brown chest to the icy cold.

'*No!* – not the hoses, *please!*'

Vögeli took one of the thin tubes in his blunt fingers and leaned close to peer at the puffy, calloused nodule of irritated skin that formed around it where it entered the flesh. He touched the nodule lightly, causing the digger to whimper.

'No, please!'

'Stop snivelling!'

Vögeli laid his thumbs against the nodule and exerted a sudden pressure. There was slight popping sound as the skin slid back a fraction of an inch along the tube. Manue yelped and closed his eyes.

'Shut up! I know what I'm doing.' He repeated the process with the other tube. Then he seized both tubes in his hands and wiggled them slightly in and out, as if to ensure a proper resetting of the skin. The digger cried weakly and slumped in a dead faint.

When he awoke, he was in bed in the barracks, and a medic was painting the sore spots with a bright yellow solution that chilled his skin.

'Woke up, huh?' the medic grunted cheerfully. 'How you feel?'

'*Malo !*' he hissed.

'Stay in bed for the day, son. Keep your oxy up high. Make you feel better.'

The medic went away, but Vögeli lingered, smiling at him grimly from the doorway. 'Don't try goofing off tomorrow too.'

Manue hated the closed door with silent eyes, and listened intently until Vögeli's footsteps left the building. Then, following the medic's instructions, he turned his oxy to maximum, even though the faster flow of blood made the chest-valves ache. The sickness fled, to be replaced with a weary afterglow. Drowsiness came over him, and he slept.

Sleep was a dread black-robed phantom on Mars. Mars pressed the same incubus upon all newcomers to her soil: a nightmare of falling, falling, falling into bottomless space. It was the faint gravity, they said, that caused it. The body felt buoyed up, and the subconscious mind recalled down-going elevators, and diving aeroplanes, and a fall from a high cliff. It suggested these things in dreams, or if the dreamer's oxy were set too low, it conjured up a nightmare of sinking slowly deeper and deeper in cold, black water that filled the victim's throat. Newcomers were segregated in a separate barracks so that their nightly screams would not disturb the old-timers who had finally adjusted to Martian conditions.

But now, for the first time since his arrival, Manue slept soundly, airily, and felt borne up by beams of bright light.

When he awoke again, he lay clammy in the horrifying knowledge that he had not been breathing! It was so comfortable not to breathe. His chest stopped hurting because of the stillness of his rib-cage. He felt refreshed and alive. Peaceful sleep.

Suddenly he was breathing again in harsh gasps, and cursing himself for the lapse, and praying amid quiet tears as he visualized the wasted chest of a troffie.

'*Heh heh !*' wheezed an oldster who had come in to readjust the furnace in the rookie barracks. 'You'll get to be a Martian pretty soon, boy. I been here seven years. Look at *me*.'

Manue heard the gasping voice and shuddered; there was no need to look.

'You just as well not fight it. It'll get you. Give in, make it easy on yourself. Go crazy if you don't.'

'Stop it! Let me alone!'

'Sure. Just one thing. You wanta go home, you think. I went home. Came back. You will, too. They all do, 'cept engineers. Know why?'

'Shut up!' Manue pulled himself erect on the cot and hissed anger at the old-timer, who was neither old nor young, but only withered by Mars. His head suggested that he might be around thirty-five, but his body was weak and old.

The veteran grinned. 'Sorry,' he wheezed. 'I'll keep my mouth shut.' He hesitated, then extended his hand. 'I'm Sam Donnell, mech-repairs.'

Manue still glowered at him. Donnell shrugged and dropped his hand.

'Just trying to be friends,' he muttered, and walked away.

The digger started to call after him but only closed his mouth again, tightly. Friends? He needed friends, but not a troffie. He couldn't even bear to look at them, for fear he might be looking into the mirror of his own future.

Manue climbed out of his bunk and donned his fleeceskins. Night had fallen, and the temperature was already twenty below. A soft sift of icedust obscured the stars. He stared about in the darkness. The mess hall was closed, but a light burned in the canteen and another in the foremen's club, where the men were playing cards and drinking. He went to get his alcohol ration, gulped it mixed with a little water, and trudged back to the barracks alone.

The Tibetan was in bed, staring blankly at the ceiling. Manue sat down and gazed at his flat, empty face.

'Why did you come here, Gee?'

'Come where?'

'To Mars.'

Gee grinned, revealing large black-streaked teeth. 'Make money. Good money on Mars.'

'Everybody make money, huh?'

'Sure.'

'Where's the money come from?'

Gee rolled his face towards the Peruvian and frowned. 'You crazy? Money come from Earth, where all money come from.'

'And what does Earth get back from Mars?'

Gee looked puzzled for a moment, then gathered anger because he found no answer. He grunted a monosyllable in his native tongue, then rolled over and went to sleep.

Manue was not normally given to worrying about such things, but now he found himself asking, 'What am I doing here?' – and then, 'What is *anybody* doing here?'

The Mars Project had started eighty or ninety years ago, and its end goal was to make Mars habitable for colonists without Earth support, without oxies and insulated suits and the various gadgets a man now had to use to keep himself alive on the fourth planet. But thus far, Earth had planted without reaping. The sky was a bottomless well into which Earth poured her tools, dollars, manpower, and engineering skill. And there appeared to be no hope for the near future.

Manue felt suddenly trapped. He could not return to Earth before the end of his contract. He was trading five years of virtual enslavement for a sum of money which would buy a limited amount of freedom. But what if he lost his lungs, became a servant of the small aerator for the rest of his days? Worst of all: whose ends was he serving? The contractors were getting rich – on government contracts. Some of the engineers and foremen were getting rich – by various forms of embezzlement of government funds. But what were the people back on Earth getting for their money?

Nothing.

He lay awake for a long time, thinking about it. Then he resolved to ask someone tomorrow, someone smarter than himself.

But he found the question brushed aside. He summoned enough nerve to ask Vögeli, but the foreman told him harshly to keep working and quit wondering. He asked the structural engineer who supervised the building, but the man only laughed, and said: 'What do you care? You're making good money.'

They were running concrete now, laying the long strips of Martian steel in the bottom of the trench and dumping in great

slobbering wheelbarrowfuls of grey-green mix. The drillers were continuing their tedious dry cut deep into the red world's crust. Twice a day they brought up a yard-long cylindrical sample of the rock and gave it to a geologist who weighed it, roasted it, weighed it again, and tested a sample of the condensed steam – if any – for tritium content. Daily, he chalked up the results on a blackboard in front of the engineering hut, and the technical staff crowded around for a look. Manue always glanced at the figures, but failed to understand.

Life became an endless routine of pain, fear, hard work, anger. There were few diversions. Sometimes a crew of entertainers came out from the Mare Erythraeum, but the labour gang could not all crowd in the pressurized staff-barracks where the shows were presented, and when Manue managed to catch a glimpse of one of the girls walking across the clearing, she was bundled in fleeceskins and hooded by a parka.

Itinerant rabbis, clergymen, and priests of the world's major faiths came occasionally to the camp: Buddhist, Moslem, and the Christian sects. Padre Antonio Selni made monthly visits to hear confessions and offer Mass. Most of the gang attended all services as a diversion from routine, as an escape from nostalgia. Somehow it gave Manue a strange feeling in the pit of his stomach to see the Sacrifice of the Mass, two thousand years old, being offered in the same ritual under the strange dark sky of Mars – with a section of the new foundation serving as an altar upon which the priest set crucifix, candles, relic-stone, missal, chalice, paten, ciborium, cruets, et cetera. In filling the wine-cruet before the service, Manue saw him spill a little of the red-clear fluid upon the brown soil – wine, Earth-wine from sunny Sicilian vineyards, trampled from the grapes by the bare stamping feet of children. Wine, the rich red blood of Earth, soaking slowly into the crust of another planet.

Bowing low at the consecration, the unhappy Peruvian thought of the prayer a rabbi had sung the week before: 'Blessed be the Lord our God, King of the Universe, Who makest bread to spring forth out of the Earth.'

Earth chalice, Earth blood, Earth God, Earth worshippers –

with plastic tubes in their chests and a great sickness in their hearts.

He went away saddened. There was no faith here. Faith needed familiar surroundings, the props of culture. Here there were only swinging picks and rumbling machinery and sloshing concrete and the clatter of tools and the wheezing of troffies. Why? For five dollars an hour and keep?

Manue, raised in a back-country society that was almost a folk-culture, felt deep thirst for a goal. His father had been a stone-mason, and he had laboured lovingly to help build the new cathedral, to build houses and mansions and commercial buildings, and his blood was mingled in their mortar. He had built for the love of his community and the love of the people and their customs, and their gods. He knew his own ends, and the ends of those around him. But what sense was there in this endless scratching at the face of Mars? Did they think they could make it into a second Earth, with pine forests and lakes and snow-capped mountains and small country villages? Man was not that strong. No, if he were labouring for any cause at all, it was to build a world so unearthlike that he could not love it.

The foundation was finished. There was very little more to be done until the drillers struck pay. Manue sat around the camp and worked at breathing. It was becoming a conscious effort now, and if he stopped thinking about it for a few minutes, he found himself inspiring shallow, meaningless little sips of air that scarcely moved his diaphragm. He kept the aerator as low as possible, to make himself breathe great gasps that hurt his chest, but it made him dizzy, and he had to increase the oxygenation lest he faint.

Sam Donnell, the troffie mech-repairman, caught him about to slump dizzily from his perch atop a heap of rocks, pushed him erect, and turned his oxy back to normal. It was late afternoon, and the drillers were about to change shifts. Manue sat shaking his head for a moment, then gazed at Donnell gratefully.

'That's dangerous, kid,' the troffie wheezed. 'Guys can go psycho doing that. Which you rather have: sick lungs or sick mind?'

'Neither.'

'I know, but—'

'I don't want to talk about it.'

Donnell stared at him with a faint smile. Then he shrugged and sat down on the rock heap to watch the drilling.

'Oughta be hitting the tritium ice in a couple of days,' he said pleasantly. 'Then we'll see a big blow.'

Manue moistened his lips nervously. The troffies always made him feel uneasy. He stared aside.

'Big blow?'

'Lotta pressure down there, they say. Something about the way Mars got formed. Dust cloud hypothesis.'

Manue shook his head. 'I don't understand.'

'I don't either. But I've heard them talk. Couple of billion years ago, Mars was supposed to be a moon of Jupiter. Picked up a lot of ice crystals over a rocky core. Then it broke loose and picked up a rocky crust – from another belt of the dust cloud. The pockets of tritium ice catch a few neutrons from uranium ore – down under. Some of the tritium goes into helium. Frees oxygen. Gases form pressure. Big blow.'

'What are they going to do with the ice?'

The troffie shrugged. 'The engineers might know.'

Manue snorted and spat. 'They know how to make money.'

'Heh! Sure, everybody's gettin' rich.'

The Peruvian stared at him speculatively for a moment.

'Señor Donnell, I—'

'Sam'll do.'

'I wonder if anybody knows why . . . well . . . why we're really here.'

Donnell glanced up to grin, then waggled his head. He fell thoughtful for a moment, and leaned forward to write in the earth. When he finished, he read it aloud.

'A plough plus a horse plus land equals the necessities of life.' He glanced up at Manue. 'Fifteen hundred AD.'

The Peruvian frowned his bewilderment. Donnell rubbed out what he had written and wrote again.

'A factory plus steam turbines plus raw materials equals necessities plus luxuries. Nineteen hundred AD.'

He rubbed it out and repeated the scribbling. 'All those things

plus nuclear power and computer controls equal a surplus of everything. Twenty-one hundred AD.'

'So?'

'So, it's either cut production or find an outlet. Mars is an outlet for surplus energies, manpower, money. Mars Project keeps money turning over, keeps everything turning over. Economist told me that. Said if the Project folded, surplus would pile up – big depression on Earth.'

The Peruvian shook his head and sighed. It didn't sound right somehow. It sounded like an explanation somebody figured out after the whole thing started. It wasn't the kind of goal he wanted.

Two days later, the drill hit ice, and the 'big blow' was only a fizzle. There was talk around the camp that the whole operation had been a waste of time. The hole spewed a frosty breath for several hours, and the drill crews crowded around to stick their faces in it and breathe great gulps of the helium oxygen mixture. But then the blow subsided, and the hole leaked only a wisp of steam.

Technicians came, and lowered sonar 'cameras' down to the ice. They spent a week taking internal soundings and plotting the extent of the ice-dome on their charts. They brought up samples of ice and tested them. The engineers worked late into the Martian nights.

Then it was finished. The engineers came out of their huddles and called to the foremen of the labour gangs. They led the foremen around the site, pointing here, pointing there, sketching with chalk on the foundation, explaining in solemn voices. Soon the foremen were bellowing at their crews.

'Let's get the derrick down!'

'Start that mixer going!'

'Get that steel over here!'

'Unroll that dip-wire!'

'Get a move on! Shovel that fill!'

Muscles tightened and strained, machinery clamoured and rang. Voices grumbled and shouted. The operation was starting again. Without knowing why, Manue shovelled fill and stretched dip-wire and poured concrete for a big floor slab to be run

across the entire hundred-yard square, broken only by the big pipe-casing that stuck up out of the ground in the centre and leaked a thin trail of steam.

The drill crew moved their rig half a mile across the plain to a point specified by the geologists and began sinking another hole. A groan went up from structural boys: 'Not *another* one of these things!'

But the supervisory staff said, 'No, don't worry about it.'

There was much speculation about the purpose of the whole operation, and the men resented the quiet secrecy connected with the project. There could be no excuse for secrecy, they felt, in time of peace. There was a certain arbitrariness about it, a hint that the Commission thought of its employees as children, or enemies, or servants. But the supervisory staff shrugged off all questions with: 'You know there's tritium ice down there. You know it's what we've been looking for. Why? Well – what's the difference? There are lots of uses for it. Maybe we'll use it for one thing, maybe for something else. Who knows?'

Such a reply might have been satisfactory for an iron mine or an oil well or a stone quarry, but tritium suggested hydrogen-fusion. And no transportation facilities were being installed to haul the stuff away – no pipelines nor railroad tracks nor glider ports.

Manue quit thinking about it. Slowly he came to adopt a grim cynicism towards the tediousness, the back-breaking labour of his daily work; he lived from day to day like an animal, dreaming only of a return to Earth when his contract was up. But the dream was painful because it was distant, as contrasted with the immediacies of Mars: the threat of atrophy, coupled with the discomforts of continued breathing, the nightmares, the barrenness of the landscape, the intense cold, the harshness of men's tempers, the hardship of labour, and the lack of a cause.

A warm, sunny Earth was still over four years distant, and tomorrow would be another back-breaking, throat-parching, heart-tormenting, chest-hurting day. Where was there even a little pleasure in it? It was so easy, at least, to leave the oxy turned up at night, and get a pleasant restful sleep. Sleep was

the only recourse from harshness, and fear robbed sleep of its quiet sensuality – unless a man just surrendered and quit worrying about his lungs.

Manue decided that it would be safe to give himself two completely restful nights a week.

Concrete was run over the great square and trowelled to a rough finish. A glider train from the Mare Erythraeum brought in several huge crates of machinery, cut-stone masonry for building a wall, a shipful of new personnel, and a real rarity: lumber, cut from the first Earth-trees to be grown on Mars.

A building began going up with the concrete square for foundation and floor. Structures could be flimsier on Mars; because of the light gravity, compression-stresses were smaller. Hence, the work progressed rapidly, and as the flat-roofed structure was completed, the technicians began uncrating new machinery and moving it into the building. Manue noticed that several of the units were computers. There was also a small steam-turbine generator driven by an atomic-fired boiler.

Months passed. The building grew into an integrated mass of power and control systems. Instead of using the well for pumping, the technicians were apparently going to lower something into it. A bomb-shaped cylinder was slung vertically over the hole. The men guided it into the mouth of the pipe casing, then let it down slowly from a massive cable. The cylinder's butt was a multi-contact socket like the female receptacle for a hundred-pin electron tube. Hours passed while the cylinder slipped slowly down beneath the hide of Mars. When it was done, the men hauled out the cable and began lowering stiff sections of pre-wired conduit, fitted with a receptacle at one end and a male plug at the other, so that as the sections fell into place, a continuous bundle of control cables was built up from 'bomb' to surface.

Several weeks were spent in connecting circuits, setting up the computers, and making careful tests. The drillers had finished the second well hole, half a mile from the first, and Manue noticed that while the testing was going on, the engineers sometimes stood atop the building and stared anxiously towards the steel skeleton in the distance. Once while the tests

were being conducted, the second hole began squirting a jet of steam high in the thin air, and a frantic voice bellowed from the roof top.

'Cut it! Shut it off! Sound the danger whistle!'

The jet of steam began to shriek a low-pitched whine across the Martian desert. It blended with the rising and falling *OOOOawwwww* of the danger siren. But gradually it subsided as the men in the control station shut down the machinery. All hands came up cursing from their hiding places, and the engineers stalked out to the new hole carrying Geiger counters. They came back wearing pleased grins.

The work was nearly finished. The men began crating up the excavating machinery and the drill rig and the tools. The control-building devices were entirely automatic, and the camp would be deserted when the station began operation. The men were disgruntled. They had spent a year of hard labour on what they had thought to be a tritium well, but now that it was done, there were no facilities for pumping the stuff or hauling it away. In fact, they had pumped various solutions *into* the ground through the second hole, and the control station shaft was fitted with pipes that led from lead-lined tanks down into the earth.

Manue had stopped trying to keep his oxy properly adjusted at night. Turned up to a comfortable level, it was like a drug, ensuring comfortable sleep – and like addict or alcoholic, he could no longer endure living without it. Sleep was too precious, his only comfort. Every morning he awoke with a still, motionless chest, felt frightening remorse, sat up gasping, choking, sucking at the thin air with whining rattling lungs that had been idle too long. Sometimes he coughed violently, and bled a little. And then for a night or two he would correctly adjust the oxy, only to wake up screaming and suffocating. He felt hope sliding grimly away.

He sought out Sam Donnell, explained the situation, and begged the troffie for helpful advice. But the mech-repairman neither helped nor consoled nor joked about it. He only bit his lip, muttered something non-committal, and found an excuse to hurry away. It was then that Manue knew his hope was gone. Tissue was withering, tubercules forming, tubes growing

closed. He knelt abjectly beside his cot, hung his face in his hands, and cursed softly, for there was no other way to pray an unanswerable prayer.

A glider train came in from the north to haul away the disassembled tools. The men lounged around the barracks or wandered across the Martian desert, gathering strange bits of rock and fossils, searching idly for a glint of metal or crystal in the wan sunshine of early fall. The lichens were growing brown and yellow, and the landscape took on the hues of Earth's autumn if not the forms.

There was a sense of expectancy around the camp. It could be felt in the nervous laughter, and the easy voices, talking suddenly of Earth and old friends and the smell of food in a farm kitchen, and old half-forgotten tastes for which men hungered: ham searing in the skillet, a cup of frothing cider from a fermenting crock, iced melon with honey and a bit of lemon, onion gravy on homemade bread. But someone always remarked, 'What's the matter with you guys? We ain't going home. Not by a long shot. We're going to another place just like this.'

And the group would break up and wander away, eyes tired, eyes haunted with nostalgia.

'What're we waiting for?' men shouted at the supervisory staff. 'Get some transportation in here. Let's get rolling.'

Men watched the skies for glider trains or jet transports, but the skies remained empty, and the staff remained close-mouthed. Then a dust column appeared on the horizon to the north, and a day later a convoy of tractor-trucks pulled into camp.

'Start loading aboard, men!' was the crisp command.

Surly voices: 'You mean we don't go by air? We gotta ride those kidney bouncers? It'll take a week to get to Mare Ery! Our contract says—'

'Load aboard! We're not going to Mare Ery yet!'

Grumbling, they loaded their baggage and their weary bodies into the trucks, and the trucks thundered and clattered across the desert, rolling towards the mountains.

The convoy rolled for three days towards the mountains, stop-

ping at night to make camp, and driving on at sunrise. When they reached the first slopes of the foothills, the convoy stopped again. The deserted encampment lay a hundred and fifty miles behind. The going had been slow over the roadless desert.

'Everybody out!' barked the messenger from the lead truck. 'Bail out! Assemble at the foot of the hill.'

Voices were growling among themselves as the men moved in small groups from the trucks and collected in a milling tide in a shallow basin, overlooked by a low cliff and a hill. Manue saw the staff climb out of a cab and slowly work their way up the cliff. They carried a portable public address system.

'Gonna get a preaching,' somebody snarled.

'Sit down, please!' barked the loud-speaker. 'You men sit down there! Quiet – quiet, please!'

The gathering fell into a sulky silence. Will Kinley stood looking out over them, his eyes nervous, his hand holding the mike close to his mouth so that they could hear his weak troffie voice.

'If you men have questions,' he said, 'I'll answer them now. Do you want to know what you've been doing during the past year?'

An affirmative rumble arose from the group.

'You've been helping to give Mars a breathable atmosphere.' He glanced briefly at his watch, then looked back at his audience. 'In fifty minutes, a controlled chain reaction will start in the tritium ice. The computers will time it and try to control it. Helium and oxygen will come blasting up out of the second hole.'

A rumble of disbelief arose from his audience. Someone shouted: 'How can you get air to blanket a planet from one hole?'

'You can't,' Kinley replied crisply. 'A dozen others are going in, just like that one. We plan three hundred, and we've already located the ice pockets. Three hundred wells, working for eight centuries, can get the job done.'

'Eight centuries! What good—'

'Wait!' Kinley barked. 'In the meantime, we'll build pressurized cities close to the wells. If everything pans out, we'll get a lot of colonists here, and gradually condition them to live

in a seven or eight psi atmosphere – which is about the best we can hope to get. Colonists from the Andes and the Himalayas – they wouldn't need much conditioning.'

'*What about us?*'

There was a long plaintive silence. Kinley's eyes scanned the group sadly, and wandered towards the Martian horizon, gold and brown in the late afternoon. 'Nothing – about us,' he muttered quietly.

'Why did we come out here?'

'Because there's danger of the reaction getting out of hand. We can't tell anyone about it, or we'd start a panic.' He looked at the group sadly. 'I'm telling you now, because there's nothing you could do. In thirty minutes—'

There were angry murmurs in the crowd. 'You mean there may be an explosion?'

'There *will* be a limited explosion. And there's very little danger of anything more. The worst danger is in having ugly rumours start in the cities. Some fool with a slip-stick would hear about it, and calculate what would happen to Mars if five cubic miles of tritium ice detonated in one split second. It would probably start a riot. That's why we've kept it a secret.'

The buzz of voices was like a disturbed beehive. Manue Nanti sat in the midst of it, saying nothing, wearing a dazed and weary face, thoughts jumbled, soul drained of feeling.

Why should men lose their lungs that after eight centuries of tomorrows, other men might breathe the air of Mars as the air of Earth?

Other men around him echoed his thoughts in jealous mutterings. They had been helping to make a world in which they would never live.

An enraged scream arose near where Manue sat. 'They're going to blow us up! They're going to blow up Mars.'

'Don't be a fool!' Kinley snapped.

'Fools they call us! We *are* fools! For ever coming here! We got sucked in! Look at *me*!' A pale dark-haired man came wildly to his feet and tapped his chest. 'Look! I'm losing my lungs! We're all losing our lungs! Now they take a chance on killing everybody.'

'Including ourselves,' Kinley called coldly.

'We oughta take him apart. We oughta kill everyone who knew about it – and Kinley's a good place to start!'

The rumble of voices rose higher, calling both agreement and dissent. Some of Kinley's staff were looking nervously towards the trucks. They were unarmed.

'You men sit down!' Kinley barked.

Rebellious eyes glared at the supervisor. Several men who had come to their feet dropped to their haunches again. Kinley glowered at the pale upriser who called for his scalp.

'Sit down, Handell!'

Handell turned his back on the supervisor and called out to the others. 'Don't be a bunch of cowards! Don't let him bully you!'

'You men sitting around Handell. Pull him down.'

There was no response. The men, including Manue, stared up at the wild-eyed Handell gloomily, but made no move to quiet him. A pair of burly foremen started through the gathering from its outskirts.

'Stop!' Kinley ordered. 'Turpin, Schultz – get back. Let the men handle this themselves.'

Half a dozen others had joined the rebellious Handell. They were speaking in low tense tones among themselves.

'For the last time, men! Sit down!'

The group turned and started grimly towards the cliff. Without reasoning why, Manue slid to his feet quietly as Handell came near him. 'Come on, fellow, let's get him,' the leader muttered.

The Peruvian's fist chopped a short stroke to Handell's jaw, and the dull *thuk* echoed across the clearing. The man crumpled, and Manue crouched over him like a hissing panther. 'Get back!' he snapped at the others. 'Or I'll jerk his hoses out.'

One of the others cursed him.

'Want to fight, fellow?' the Peruvian wheezed. 'I can jerk several hoses out before you drop me!'

They shuffled nervously for a moment.

'The guy's crazy!' one complained in a high voice.

'Get back or he'll kill Handell!'

They sidled away, moved aimlessly in the crowd, then sat

down to escape attention. Manue sat beside the fallen man and gazed at the thinly smiling Kinley.

'Thank you, son. There's a fool in every crowd.' He looked at his watch again. 'Just a few minutes, men. Then you'll feel the earth-tremor, and the explosion, and the wind. You can be proud of that wind, men. It's new air for Mars, and you made it.'

'But we can't breathe it!' hissed a troffie.

Kinley was silent for a long time, as if listening to the distance. 'What man ever made his own salvation?' he murmured.

They packed up the public address amplifier and came down the hill to sit in the cab of a truck, waiting.

It came as an orange glow in the south, and the glow was quickly shrouded by an expanding white cloud. Then, minutes later the ground pulsed beneath them, quivered and shook. The quake subsided, but remained as a hint of vibration. Then, after a long time, they heard the dull-throated roar thundering across the Martian desert. The roar continued steadily, grumbling and growling as it would do for several hundred years.

There was only a hushed murmur of awed voices from the crowd. When the wind came, some of them stood up and moved quietly back to the trucks, for now they could go back to a city for reassignment. There were other tasks to accomplish before their contracts were done.

But Manue Nanti still sat on the ground, his head sunk low, desperately trying to gasp a little of the wind he had made, the wind out of the ground, the wind of the future. But his lungs were clogged, and he could not drink of the racing wind. His big calloused hand clutched slowly at the ground, and he choked a brief sound like a sob.

A shadow fell over him. It was Kinley, come to offer his thanks for the quelling of Handell. But he said nothing for a moment as he watched Manue's desperate Gethsemane.

'Some sow, others reap,' he said.

'Why?' the Peruvian choked.

The supervisor shrugged. 'What's the difference? But if you can't be both, which would you rather be?'

Nanti looked up into the wind. He imagined a city to the south, a city built on tear-soaked ground, filled with people who had no ends beyond their culture, no goal but within their own society. It was a good sensible question: which would he rather be – sower or reaper?

Pride brought him slowly to his feet, and he eyed Kinley questioningly. The supervisor touched his shoulder.

'Go on to the trucks.'

Nanti nodded and shuffled away. He had wanted something to work for, hadn't he? Something more than the reasons Donnell had given. Well, he could smell a reason, even if he couldn't breathe it.

Eight hundred years was a long time, but then – long time, big reason. The air smelled good, even with its clouds of boiling dust.

He knew now what Mars was – not a ten-thousand-a-year job, not a garbage can for surplus production. But an eight-century passion of human faith in the destiny of the race of Man. He paused short of the truck. He had wanted to travel, to see the sights of Earth, the handiwork of Nature and of history, the glorious places of his planet.

He stooped, and scooped up a handful of the red-brown soil, letting it sift slowly between his fingers. Here was Mars – his planet now. No more of Earth, not for Manue Nanti. He adjusted his aerator more comfortably and climbed into the waiting truck.

NOISE LEVEL

by *Raymond F. Jones*

I

DR MARTIN NAGLE studied the paint on the ceiling of the outer anteroom of the Office of National Research. After ten minutes he was fairly certain which corner had been painted first, the direction of advance across the ceiling, and approximately how long it had taken.

It was a new building and a new paint job, but these facts were evident in the brush marks and brush hairs left in the paint. On the whole, the job was something of an indication of how things were in general, he thought somewhat sadly.

He studied the rug. Specifications should have been higher. The manufacturer undoubtedly operated on the principle of 'don't throw away seconds; you can always sell them to the Government.'

His watch showed twenty-five minutes spent in the study of the anteroom. It was all he was going to give it. He picked up his briefcase and top coat and moved towards the door.

He almost collided with a grey-suited figure, then backed away in pleasant recognition.

'Berk!'

The face of Dr Kenneth Berkeley lighted as he gripped Martin Nagle's free hand and clapped him on the shoulder.

'What are you doing out here in this waiting room, Mart?'

'I got invited to some conference with all the top dogs and high brass, but the boys in blue wouldn't let me in. I was just on the way back to California. But you're one of the last I expected to meet here. What are you doing, Berk?'

' I work on ONR. I'm on this conference myself. They sent me out to look for you. Everybody else has arrived.'

'I saw the parade from here. Dykstra of MIT, Collins of Harvard, and Mellon from Cal Tech. A high-powered bunch.'

'It is. And they're all waiting on you! Come on. We'll talk later.'

Mart jerked a thumb towards the office opening off the anteroom. 'The boys in there seem to have doubts as to whether I can be trusted not to pass things on to the Comrades. I can't wait around. It'll probably take six weeks to clear me. I thought all that would have been taken care of. Evidently it wasn't. Give my regards to everybody, and tell Keyes I'm sorry I hadn't been cleared for classified projects. I guess he didn't know it.'

'No, wait – this is absolutely silly,' said Berk. 'We've got to have you in there. Sit down and we'll have this thing cleared in five minutes!'

Mart sat down again. He had never worked on any classified projects. The fingerprinting and sleuthing into the past of his colleagues had always seemed distasteful to him. He knew Berk didn't have a chance now. He'd seen more than one good man twiddle his thumbs for six months to a year while his dark past was unearthed.

Rising voices from the inner office of the FBI agent became audible. Mart caught snatches of Berk's baritone roar. 'Utterly ridiculous . . . top-drawer physicist . . . electro fields . . . got to have this man—'

After the FBI office there were still the offices of Military Intelligence and Naval Intelligence to hurdle. It was a fantastic triple barrier they had woven about this conference. On coming in he had chuckled at this further evidence of frantic bureaucrats to button up the secrets of nature which lay visible to the whole world.

In a moment Berk came striding out, red-faced and indignant. 'You stay right there, Mart,' he said furiously. 'I'm going to get Keyes on this thing, and we'll find out who's got a right to get into this place besides the janitor!'

'Look, Berk – I don't mind. I don't think you ought to bother Keyes with this—'

'I'll be right back. This thing has gone too far.'

Mart felt rather foolish. It was not his fault he couldn't get

by the security officers, but that failure induced a faint sense of guilt.

Berk returned within minutes. With him were two men in uniform, a brigadier general, and a naval captain. With them was Dr Keyes, Director of ONR. Martin knew him only by reputation – which was very top-drawer indeed. Keyes approached with a direct friendly smile and offered his hand.

'I'm very sorry, Dr Nagle, regarding this delay. I had no idea that you would be stopped at the security desk. I issued instructions in plenty of time for the conference that everyone invited be properly cleared. Somehow this formality was overlooked in your case. But I am sure that we shall be able to make satisfactory emergency arrangements within a few moments. If you will wait here while I confer with all these gentlemen—'

They closed the door of the inner office, but Mart could not help straining his ears at the rumble of sounds that filtered through. He caught a phrase in a voice that belonged to one of the security officers: '... Demanded these triple security screens yourself—'

And another from Keyes: '... The one man who may be able to crack this thing for us—'

Mart had come reluctantly. His wife had protested, and the two children had set up a tremendous wail that it might mean no summer vacation at all.

He rather wished he had heeded their protests. The moment a man became involved in something so classified it required triple passes from the Army, Navy, and FBI he could say good-bye to freedom. He wondered how Keyes had become involved in such a circuitous business. Keyes had done monumental work on electromagnetic radiation.

And he wondered, too, what Kenneth Berkeley was doing here. It was way out of his field. Berk was a top psychologist in the mechanics of learning, and experimental training procedures.

It looked to Mart as if both of them were wasting their time in security clearance wrangles.

He was not particularly intrigued by the possible magnitude of the problem under consideration. A man sitting by a mountain stream under an open summer sky had the most ponderous

problems of nature before him if he chose to consider them. None couched in hush-hush terms behind closed lab doors could have any greater import.

At last the door opened. Mart arose. Dr Keyes led the procession out of the room. All of the men were a little more strained in their expressions than when they went in, but Keyes took Mart's arm.

'It's all right. You have full clearance now. Your papers will be issued and ready when you come out. But let's get to the conference at once. We've kept the others waiting.'

As Mart stepped inside the conference room he caught his breath involuntarily. Besides the brilliant array of his colleagues in fields closely allied to his own, there was a display of gold-splashed uniforms of all military services. He had quick recognition of several lieutenant generals, vice admirals, and at least one member of the JCS.

Berk ushered him to a seat in the front row. He felt doubly guilty that these men had been kept waiting, although it was no direct fault of his.

At the front of the room a projection screen was unrolled on the wall. A sixteen mm. projector was set up near the rear. On a table on the far side a tarpaulin covered some kind of irregular object.

Keyes stepped to the front of the room and cleared his throat briefly.

'We will dispense with the formality of introducing each of you gentlemen. Many of you are acquainted, professionally or personally, and I trust that all will be before this project is many hours old.

'The top classification nature of the material we are about to discuss has been emphasized to you by the triple filter of security officers who have passed upon your admission to this room. That which is discussed here you will properly regard as worthy of protection with your own life, if such an extreme consideration should be forced upon you at some future time.'

The military members of the audience remained immobile, but Martin Nagle observed an uneasy shifting among his fellow scientists. All of them were to some degree uncomfortable in the presence of the military assumption that you could lock up

the secrets of nature when they lay all about like shells upon the seashore.

But Keyes wasn't a military man. Mart felt his muscles become a little more rigid as the significance of this penetrated.

'Ten days ago,' said Keyes very slowly, 'we were approached by a young man, an inventor of sorts, who claimed to have produced a remarkable and revolutionary invention.

'His name was Leon Dunning. He had an unusual regard for his own abilities, and expected, apparently, that everyone else would have the same regard on sight. This trait led him to a rather unpleasant presentation of himself. He would talk with no one but the Director of the Office, and made such a nuisance that it became a question of seeing him or calling the police.

'His case was drawn to my attention, and I finally chose to see him. He had some rather startling claims. He claimed to have solved the problem of producing an anti-gravity machine.'

Martin Nagle felt a sudden sinking sensation within him – and an impulse to laugh. For this he had cancelled the kids' summer vacation! Maybe it wasn't too late to get back—

He glanced at his colleagues. Dykstra was bending over and rubbing his forehead to hide the smile that appeared on his lips. Lee and Norcross gave each other smiles of pitying indulgence. Berkeley, Mart noted, was almost the only scientist who did not move or smile. But, of course, Berk was a psychologist.

'I see that some of you gentlemen are amused,' continued Keyes. 'So was I. I wondered what was the best means of getting rid of this obnoxious crackpot who had forced his way into my office. Again, it was a question of listening until the ridiculousness of his claims became self-evident, or having him thrown out. I listened.

'I tried to draw him out regarding the theories upon which his device operated, but he refused to discuss this in detail. He insisted such discussion could be held only after a demonstration of his device.

'With a free Saturday afternoon that week, I agreed to watch. Dunning insisted that certain military personnel also be invited and that films and tape recording equipment be avail-

able. Having gone as far as I had, I agreed also to this and rounded up some of the gentlemen who are with us this afternoon.

'He wanted no other kind of publicity, and so we arranged to meet at the small private airfield at the Dover club. That was just one week ago today. He demonstrated.

'A small pack was attached to his shoulders by straps. I assisted him in putting it on. It weighed perhaps thirty-five or forty pounds. It had no visible means of propulsion such as propeller or jets, and no connection to an external power source. Seeing it, I felt extremely ridiculous for having invited my military guests to such a futile performance.

'We stood in a circle about ten feet in diameter around him. When the pack was fastened, he gave us a kind of pitying smile, it seemed, and pressed a switch at his belt.

'Instantly, he rose straight up into the air in a smoothly accelerated climb. We spread apart to watch him. At about five hundred feet, he came to a stop and hung motionless for a moment. Then he dropped back down to the centre of the circle.'

Keyes paused. 'I see a variety of expressions on your faces. I presume some of you consider us who observed it as victims of hallucinations or out and out liars. We agreed afterwards that it was very fortunate that Dunning insisted on motion pictures of the demonstration. These we have for your inspection. If you will, please—'

He signalled to his assistants. The shades were drawn and the projector at the rear started with a whirr. Mart found himself leaning forward, his hand clutching the desk arm of the chair. This was something he didn't even *want* to believe, he thought!

On the screen there appeared a scene of the encircling men. In the centre, Dunning appeared to be in his late twenties. Mart could detect at once the type that Keyes had described – a snotty young jerk who knew he was good and figured others better catch on to that real fast. Mart knew the type. You run into them in senior engineering classes in every school in the country.

He watched the circle back from Dunning. There was a clear shot of the alleged inventor standing with the weird pack on his

back. He fumbled a moment with the key switch at his belt, then rose abruptly from the ground.

Mart stared. The picture panned up jerkily as the operator evidently retreated for a longer range view. He watched closely for any sign of emanation from the pack. He had to remind himself of the foolishness of looking for such. There was certainly no type of jet that could operate this way.

But anti-gravity – Mart caught a feeling that was a cross between a prickle and a chill moving slowly along the upper length of his spine.

The motion on the screen came to a halt. Then slowly Dunning lowered himself to the middle of the circle once more.

The screen went dark, and lights flashed on in the room. Mart jerked, as if waking from a hypnotic spell.

'We paused at this point,' said Keyes. 'Dunning became more talkative and discussed somewhat the basic theories of his machine. For this we used the tape recorder he had insisted on us bringing along.

'Unfortunately, the record is so poor due to high noise level and distortion that it is next to unintelligible, but we will play it for you in a moment.

'Following the discussion, he agreed to make another demonstration showing an additional factor, horizontal flight control. We'll have the movie of this, now.'

He touched the light button. The scene appeared once more. This time the circle opened at one side and Dunning rose in a rather steep arc and levelled off. Against the background, he seemed about as high as the roof of the hangar beyond. For about a hundred feet he drifted slowly, then accelerated his pace. Mart felt a wholly irrational impulse to laugh. It was Buck Rogers in full attack.

Abruptly the screen flared. A puff of light exploded from the pack on Dunning's back. For a terrible moment he seemed suspended in an attitude of violent agony. Then he plunged like a dropped stone.

The camera lost him for an instant, but it caught the full impact of his body on the field. During the fall, he turned over. The pack was beneath him as he crashed. His body bounced and rolled a short way and lay still.

Keyes moved to the light switch, and signalled for the raising of the shades. Someone rose to do this. No one else moved. The room seemed caught in a suspension of time.

'There you have it, gentlemen,' said Keyes in a quiet voice. 'You will begin to understand why you were called here today. Dunning had it – anti-gravity. Of that we are absolutely sure. And Dunning is dead.'

He drew a corner of the canvas from the table by the far wall. 'The remains of the device are here for your examination. So far, we see only burned and bloody wreckage in it. Under your supervision it will be carefully photographed and dismantled.'

He dropped the cover and returned to the centre of the platform. 'We went immediately to Dunning's house with a crew of investigators from ONR assisted by security officers of the services.

'Dunning's quite evident paranoia was carried out in an utter lack of notes. He must have lived in constant fear that his work would be stolen. His laboratory was excellent for a private worker. What his income was we don't know as yet.

'He also had an astonishing library – astonishing in that it covered almost every occult field as well. This, too, remains somewhat of a mystery.

'We investigated his college background. He appears to have had difficulty in getting along at any one college, and attended at least four. His curriculum was as varied as his library. He studied courses in electrical engineering, comparative religion, advanced astronomy, Latin, the theory of groups, general semantics and advanced comparative anatomy.

'We managed to contact about twenty of his instructors and fellow students. Their uniform opinions describe him as paranoid. He was utterly without intimates of any kind. If he communicated his theories to anyone, we do not know about it.

'So the only record we have of the expressions of the man who first devised an anti-gravity machine is this poor-quality tape.'

He nodded again to the operator at the rear of the room. The latter turned on the recorder whose output was fed to a speaker on the table in front.

At once the room was filled with a hissing, roaring garble. The sound of planes taking off – the everyday noise of the airport. Beneath the racket was the dead man's voice, a thin, rather high-pitched sound carrying through the background noise a tone of condescension and impatient tolerance.

Mart listened with ears strained to make sense of the garble. His eyes caught Berk's and reflected his despair of ever getting anything out of the mess. Keyes signalled the operator.

'I see that you are impatient with this recording, gentlemen. Perhaps there is no purpose in playing it in this conference. But each of you will be given a copy. In the privacy of your own laboratories you will have opportunity to make what you can of it. It is worth your study simply because, as far as we know, it contains the only clues we possess.'

Mart raised a hand impatiently. 'Dr Keyes, you and the others at the demonstration heard the original discussion. Can't you give us more than is on the tape?'

Keyes smiled rather bitterly. 'I wish that we could, Dr Nagle. Unfortunately, at the time it seemed that the semantic noise in Dunning's explanation was as high as the engineering noise on the tape. We have, however, filled in to the best of our recollection on the written transcript, which we will give you.

'This transcript gives what has been pieced together by phonetic experts who have analysed the tape. Observers' additions are in parentheses. These were added only if all observers agreed independently, and may or may not be accurate. Is there any other question?'

There were, they all knew, but for the moment the impact seemed to have stifled the response of the whole audience.

Keyes took a step forward. 'I wonder if there is any one of you who underestimates the seriousness of this problem now. Is there anyone who does not understand that this secret must be regained at all cost?

'We know that within the field of present knowledge there lies the knowledge necessary to conquer gravity – to take us beyond the Earth, to the stars, if we wish to go.

'We know that if one young American could do it, some young Russian could also. *We have to duplicate that work of Dunning's.*

'The full facilities of ONR are at your disposal. Access to Dunning's laboratory and library and the remains of his machine will be granted, of course. Each of you has been selected, out of all whom we might have called, because we believed you possess some special qualification for the task. You cannot fail.

'We will meet again this evening, gentlemen. I trust you understand now the necessity for absolute security on this project.'

II

A long time afterwards, Martin Nagle recalled that he must have been in a partial stupor when he left that conference room. He felt a vague and unpleasant sensation about his head as if it had been beaten repeatedly with a pillow.

He and Kenneth Berkeley went out together. They paused only long enough to make polite greetings to his fellow physicists whom he had not seen for a long time. But he was in a hurry to leave. To get rid of that feeling in his head.

In front of the ONR building he stopped with his hands in his pockets and looked over the unpleasant grey of the city's buildings. He could close his eyes and still see a man rising straight up into the air – soaring at an angle – dropping like a plummet.

All at once he realized he hadn't even stopped to examine the remains of the instrument under the tarpaulin. He turned suddenly on Berkeley.

'The psychology of this thing – is that where you're in on it, Berk?'

His companion nodded. 'Keyes called me in when he wanted an investigation into Dunning's past. I'm staying, I guess.'

'You know it's impossible, don't you?' said Mart. 'Utterly and completely impossible! There's nothing in our basic science to explain this thing, let alone duplicate it.'

'Impossible? Meaning what?'

'Meaning that I've got to . . . that every one of us has got to shift gears, back up, retrace who knows how far – twenty years of learning – five hundred years of science? Where did we go

off the track? Why was it left to a screwball like Dunning to hit it right?'

'He was an odd character,' mused Berk. 'Astrology, mysticism, levitation. There's quite a bit in the tape about levitation. That's not so far removed from the concept of anti-gravity at that, is it?'

Mart made a rough noise in his throat. 'I expect to hear any moment that his first successful flight was aboard a broomstick.'

'Well, there's quite a bit of lore about broomsticks – also magic carpets and such. Makes you wonder how it all got started.'

The shock was slow in wearing down. Martin returned to the hotel after the evening conference, which was spent mostly in examination of the wreckage.

It was as Keyes had said, hopeless. But there was an indefinable something about gazing upon the remains of what had been the realization of an impossible dream. Mart felt a kind of frantic yearning to reach out and touch that mass and convert it back to the instrument it had once been by sheer force of will. As if believing it possible would make it so.

And wasn't there some essence of truth in this, he thought? Dunning had believed it could be done and had done it. Reputable men in science didn't believe such things possible—

Now, in his hotel room, Mart sat on the edge of the bed looking out of the window and across the night lights of the city. There were certain things you had to accept as impossible. The foundation of science was built upon the concept of the impossible as well as the possible.

Perpetual motion.

The alchemist's dream – as the alchemist dreamed it, anyway.

Anti-gravity—

All man's experience in attempting to master nature showed these things could not be done. You had to set yourself some limitations. You had to let your work be bounded by certain Great Impossibles or you could spend a lifetime trying to solve the secret of invisibility or of walking through a brick wall.

Or trying to build a magic carpet.

He stood up and walked to the window. There had been growing all afternoon a sense of faint panic. And now he identified it. Where could you draw the line? It had to be drawn. He was sure of that.

It had been drawn once before, quite definitely. In the 1890s they had closed the books. Great minds believed then that science had encompassed the universe. All that was not known belonged to the Great Impossibles.

Then had come radium, the Roentgen tube, relativity, cosmic rays.

The line vanished. Where was it now? A few hours ago he would have said he could define it with fair accuracy. Tonight he did not know.

He went to bed. After an hour he got up and called Kenneth Berkeley. The clock said almost midnight. It didn't matter.

'Berk,' he said into the phone. 'Mart. I've just been thinking. The whole crowd will be going through Dunning's lab and his library. What's the chance of you getting me out there first thing in the morning? Just the two of us. I'd like to beat the crowd.'

'I think I can arrange it,' said Berk. 'Keyes wants each of you to work as you wish. I'll tell you more about that tomorrow. I'll call you as early as I can.'

It rained during the night, and when Berk called for Mart in his car, the city was dismal with fog, lessening even further the reality surrounding them.

'Keyes wasn't much in favour of this,' said Berk as they drove away from the hotel. 'It's liable to make some of the others mad, but frankly, I'm sure he's convinced that you're the member of the class mostly likely to succeed.'

Mart grunted. 'Least likely, I'd say. I'm not sure that I'm convinced yet that Dunning didn't have some terrific joker in here somewhere.'

'I know what you mean, but you will. It comes gradually. And easier for you. You're the youngest of the group. Keyes thinks some of the older men may spend all their time proving Dunning couldn't do it. How do you feel about that? Is that the way you're heading, or are you going to try to find out what Dunning did?'

'Anything a jerk like Dunning can do, Nagle can do double – once Nagle is convinced that Dunning did it.'

Berk threw back his head and laughed. 'Keyes will love you, boy. He's been afraid he wouldn't find a single top John in the country who would really try.'

Dunning's place was in the shabby, once fashionable sector of town where the owners of the gingerbread monsters were no longer able to meet the upkeep or sell them to anyone who was.

It had been learned that the house actually belonged to an uncle of Dunning, but so far he had not been located.

A guard was on duty at the front entrance. He nodded as Berk and Mart showed their passes.

'Dunning's laboratories and shops are on the first floor,' said Berk. 'Upstairs, is his library. He slept in one of the third-floor bedrooms, but the rest are vacant. A lot of cooking seemed to have been done in the back kitchen. He left a well stocked larder. Where do you want to start?'

'A quick look through the labs to begin. I want to get the feel of the layout.'

On the right of the entrance hallway, they came into a small but extremely well equipped chemistry laboratory. The place seemed well used, but immaculate. A complex fractionating set up was on the worktable.

'Almost the only piece of writing in the whole place was found on a small pad here,' said Berk. 'A bit of scratch work computation without any formulas or reactions.'

Mart grunted and moved on to the adjacent room. Here was the more familiar hodgepodge of the electronic experimenter, but even in this there was instantly apparent the mark of a careful workman. Breadboard layouts were assembled with optimum care. Test leads were carefully made of rubber-covered or shielded wire and equipped with clips instead of being the usual random lengths of coloured connecting wire hastily stripped and tied to a terminal.

A sizeable bank of rack and panel mounted equipment was not recognizable at once as to function. It appeared to be a set-up that might belong to any careful experimenter who had no regard for his bank account.

This would need further study, but Mart continued moving

through to the next room, a machine shop, as well equipped for its functions as the previous rooms. A six-inch lathe, a large drill press, and a milling machine were the chief items.

Mart whistled softly as he stood in the middle of the room and looked back the way they had come.

'When I was a kid in high school,' he said, 'this is exactly the kind of a place I thought Heaven would be.'

'And it had to belong to a person like Dunning, eh?' said Berk with a slow smile.

Mart turned sharply. His voice became low and serious. 'Berk – whatever Dunning may have been, he was no jug-head. A paranoid, maybe, but not a jug-head. He could do things. Look at this.'

He picked up a weird looking assembly from a nearby-table and held it up in the light. It gleamed with a creamy sheen. A silver-plated bit of high-frequency plumbing.

'That's beautiful,' said Mart. 'There're not more than three or four university shops in the whole country that can turn out a piece like that. I've had to fight for weeks to get our machinists to come up with anything that complex and then it would be way out of tolerance.'

He hefted the piece of plumbing lightly. He knew it was just right. It had the feel of being made right.

Berk led the way across the hall. He opened the door for Mart. There, against the walls of the room, were panels of a compact digital computer, and on the other side an analogue computer.

'But you haven't seen anything yet,' said Berk. 'The surprise of your life is upstairs.'

Gravity was a force, Mart thought as he climbed the stairs. You only lick force with force – in the world of physics, at least. In politics and human relations, force might yield to something more subtle, but if Dunning had licked gravity it was with some other – and presently known – force. Physics was at least aware of every force that existed. There were no gaps except perhaps the one temporarily occupied by the elusive neutrino.

Dunning's machine was ingenious. But it could be nothing but a clever application of well-known laws and forces. There was no miracle, no magic in it. Having decided this on a slow,

verbal basis, Mart felt somewhat more at ease. He followed Berk into the library.

There was not simply one room of it, but an entire suite had been converted and shelved. There were certainly several thousand volumes in the place.

'This is the one that may interest you most.' Berk stepped into the nearest room on his left. 'A is for Astrology,' he said. He gestured towards a full section of shelving.

Mart scanned the titles: *Astrology for the Novice*, *Astrology and the Infinite Destiny*, *The Babylonian Way*, *The Course of the Stars*.

He hopefully pulled the latter volume from the shelf against the possibility it might be an astronomy text. It wasn't. He quickly put it back with its fellows.

'Well read, too,' said Berk. 'We examined quite a number and they have copious notations in Dunning's handwriting. This may be the one place we can find real clues to his thinking – in such marginal notes.'

Mart waved a hand in violent rejection of the sombre volumes and shoved his hands deep in his pockets. 'Junk!' he muttered. 'This has no bearing on Keyes' problem at all, of course. But it certainly ought to be a problem of interest to you.'

'A guy would need two separate heads to hold an interest in the things downstairs and in this nonsense at the same time.'

'But Dunning had only a single head,' said Berk quietly. 'Maybe it's all part of a whole that we don't see – and that Dunning did.'

Mart pursed his lips and looked at the psychologist.

'I'm serious,' said Berk. 'My field is primarily the human mind, and only secondarily the subjects with which the mind deals. But we see in Dunning a single mind that can whip the matter of anti-gravity, that can hold an interest in the fields represented by the laboratories below, and can digest the material of this library.

'Now, actually, there is no true schizophrenia. In the skull of each of us is only a single individual, and anyone examined closely enough can be found to have a remarkably consistent goal, no matter how apparently erratic his activities.

'Perhaps much of the material Dunning found in both the

library and in the laboratory proved redundant, but I would say that Dunning's genius apparently lay in his ability to extract relevant material from the redundant without categorically rejecting entire areas of human thought.'

Mart smiled tolerantly and turned away. He found himself facing a section of shelves covered with works on East Indian philosophy. Six of eight feet of space was devoted to the subject of Levitation. Mart jabbed a finger at the titles.

'Anything those boys can do by hocus-pocus Nagle can do twice as fast by *x*'s and *y*'s and by making electrons jump through hoops.'

'That's all Keyes wants. How soon can you deliver?'

III

After lunch, they returned to ONR. Mart was assigned an office and given a copy of the Dunning tape. He put aside the prepared transcript, as Keyes had suggested, and prepared to listen, unbiased.

He turned on the recorder and winced at the garble of sound that blared forth again. With one hand on the volume control he rested his chin on his arm in front of the speaker and strained to hear through the noise the scarcely audible voice of Dunning.

Near the beginning, he caught the word 'levitation' mentioned many times. There was a full phrase, 'levitation which was first successfully demonstrated to the Western world by the English medium—' The buzz of a plane cut off the rest of it.

Mart rewound the tape and listened to that much of it again. At each mention of levitation an image flared up in Mart's mind. An image of a dirty, scrawny Indian fakir equipped with a filthy turban, a coil of rope over one arm, and a basket with a snake in the other hand.

But Dunning had produced anti-gravity.

What semantic significance had *he* found in the word?

Mart growled to himself in irritation and let the tape run on. There was nothing more in those first few feet of it. He perked up his ears at a phrase 'earth effect' separated by a garble from 'distribution of sunspots unexplained to date by astronomers, and politely ignored by all experts—'

It struck a faint bell of recollection in Mart's mind. He scratched a note on a pad to check on it.

The sound dissolved again to hissing and roaring, through which the dead man seemed to taunt him. He gathered that much talk was on the subject of 'planetary configurations—.' Astrology. He groaned aloud and closed his eyes through a comparatively long stretch of audibility: 'Magnetic storms on Earth predictable through movements of the planets in terms of quadrature – fields of data observed through thousands of years and do not fit explanations now accepted for other phenomena.'

It shifted apparently, after many minutes, to comparative religion. 'Galileo and Newton,' Dunning said, 'affected man's thinking more than they knew. They clipped from religion its miracles and from physics its imagination . . . of India there's more conquest of the physical universe than in a score of American research laboratories.'

And that was the last of it. The tape fizzled out in a long garble of buzzing planes and faulty recording. Mart turned off the machine.

That was it. The mind and work of the first man to directly conquer gravity!

With an almost physical weariness he turned to the transcript and scanned through it. There was more, but it was astonishing how little additional information was actually added from the memories of the original observers. Mart supposed Dunning's words were such a shock to those military and scientific minds that they were stunned into semi-permanent amnesia in respect to the things he said.

He leaned back in the chair, summing up what he had heard. Dunning's thesis seemed to be that much sound data had been excluded by conventional scientists from standard theories. The dead man had believed much of this data could be found and explained in the various realms of astrology, East Indian mysticism, movements of sunspots, the levitation of mediums, and a host of other unorthodox areas.

Where was the thread of rational thought that could find its way through this? He closed his eyes again, trying to feel for a starting point.

There came a knock on the door, and a voice. 'May I come in, Dr Nagle?'

It was Keyes. Mart rose and offered a chair. 'I have just finished the tapes and transcription. There is very little to go on.'

'Very little indeed,' said Keyes. 'When you were a youngster entering a contest for the first time you had a feeling for it. You know what I mean. It's in your throat and chest, and in your stomach. It goes all the way through your legs to your toes.

'It's the feeling of your entire organism – a feeling that you haven't got a chance to win – or that you are going to acquit yourself to the maximum ability within you, regardless of the strength of others. Do you understand me?'

Mart nodded.

'What kind of a feeling do you have about this, Dr Nagle?'

Mart relaxed and leaned back with his eyes half closed. He understood Keyes. He had gone through the range of all possible feelings since yesterday afternoon. Which one of them had remained with him?

'I can do it,' he said quietly to Keyes. 'I could wish for more data, and I'm not wholly in sympathy with Dunning's approach. But I can examine the data he had, and re-examine the data I have. And I can do it.'

'Good!' Keyes stood up. 'That's what I came in to find out. And your answer is what I hoped to hear. You may expect that your reaction is not quite universal among your colleagues, although I feel all will co-operate. But some of them will be licked before they start, because they will feel, and persist in feeling, that the thing ought not to be.'

Dr Kenneth Berkeley had never ceased to wonder at the constitution of man. When he was very young he had wondered why some of his fellows believed in fairies, and others did not. He wondered why some could believe the moon was made of green cheese, and others were equally sure it could not be so.

He grew to wonder intensely just how man knew anything for sure, and that long road of wonder led to the present moment of his status as fellow in psychology at ONR.

He was grateful for the privilege of being on this project under the leadership of Dr Keyes. Keyes appreciated more

than any other physicist that he had known the importance of the fact that an individual is a man first and a scientist second – that there is no true objectivity in science. There is no divorcing the observer from the observed, and every scientific theory and law, no matter how conscientiously propounded and objectively proved is nevertheless coloured by the observer.

Berkeley was intrigued by the study of the physicists' reactions to the situation in which Dunning's discovery and death had placed them.

Martin Nagle had reacted approximately as Berkeley expected. They had known each other well during undergraduate days in college, drifting apart later as their professions diverged.

Through the day Berkeley conducted the rest of the scientists through the house. A number of them had made requests to go privately as Mart had done. Others went in groups of three or four. But by the end of the day all had visited the place except Professor Wilson Dykstra.

During the first day, Dykstra confined himself to a study of the tape and transcription. He did not present himself for a visit to the Dunning house until the following morning.

Berk called at his hotel. He kept the psychologist waiting fifteen minutes before he finally appeared through the revolving doors.

Dykstra was a small, round man in his late sixties, owlish in heavy framed glasses. His jutting lower lip seemed to signify his being perpetually on the defensive, as if he couldn't believe the world were really as he saw it. But Berk knew he was a great man in his own field. He had contributed much to the elucidation of Einstein's work in relation to gravity, which was the reason for his being invited to participate in the project.

The sky was threatening, and Dykstra clutched a black umbrella to his chest as he emerged from the hotel. Berk waited with the car door open.

'Good morning, Dr Dykstra. It looks as if we'll be alone this morning. Everyone else took a visit to Dunning's yesterday.'

Dykstra grunted and got in. 'That's the way I wanted it. I spent a full day yesterday going over that ridiculous tape recording.'

Berk moved the car out into the line of traffic. He had rather

felt from the very first that the project could get along just as well without Dykstra.

'Were you able to derive anything at all from it?'

'I have reached no conclusion as yet, Dr Berkeley. But when I do, I do not believe it is going to be that young Dunning was the unadulterated genius some of you people consider him. Surely you, a psychologist, can understand the type of mind that would produce such a mixture of unrelated and irrelevant, not to say mythological, material!'

'There are many strange things about the human mind, which we do not know,' said Berk. 'One of the least understood is the point at which genius ends and nonsense begins.'

'In physics the march is steadily upwards! We have no doubt as to which way lies progress.'

Berk let that one ride. A man who saw in the world such terrible simplicity might ultimately find Dunning's mystery completely transparent. He couldn't risk that possibility by arguing.

They drew up to the old mansion Dunning had occupied. Dykstra surveyed it from the car. 'The kind of a place you would expect,' he grunted.

It was difficult to estimate what was going on in the physicist's mind as he came into the laboratories.

In the first room he scanned the shelves of reagents. He took down a dozen bottles and examined their labels closely. Of some he removed the stoppers and sniffed cautiously, then replaced them all on the shelf in mild disdain.

He spent a long time examining the fractionating set-up in the centre of the room. He spotted the pad of computations left there and drew an old envelope from his pocket and did some comparison scribbling.

In the electronics room he turned to look through the doorway. 'Why would any man want two such laboratories as these?'

His inspection was much more thorough than that of any of the others, including Martin Nagle. Berk supposed that Mart and many of the others would be back, but Dykstra was going through with a fine-toothed comb the first time.

He poked through the machine shop. 'Well equipped,' he muttered, 'for a man who likes to tinker.'

But he was highly impressed by the computer room. He examined the settings of the instruments and the chart papers. He opened every desk drawer and shuffled through the scattering of papers inside.

Red-faced, he turned to Berk. 'This is absurd! Certainly there would be charts, papers, or something showing the man's calculations. These instruments are not here for show; they've obviously been used. Someone has removed the computational material from this room!'

'It's just as we found it,' said Berk. 'We don't understand it any better than you.'

'I don't believe it,' said Dykstra flatly.

The reaction of the physicist to the library was the thing Berk was most interested in. He let Dykstra look at will over the strange and exotic collection of volumes.

At first Dykstra reacted like a suddenly caged animal. He ran from the shelves of mythology, got a glance at the section on astrology, hurried from there to the books on faith-healing, and made a spiral turn that brought him up against the region of material on East Indian philosophy.

'What is this,' he bellowed hoarsely, 'a joke?'

The pudgy figure seemed to swell visibly with indignation.

'The next room would interest you most, perhaps,' said Berk.

Dykstra almost ran through the adjoining door as if escaping some devil with whom he had come face to face. Then, catching sight of the titles here, he began to breathe easily and with an audible sighing of relief. He was among friends.

With an air of reference, he took down a worn copy of Weyl's *Space Time Matter*, and a reissue of the relativity papers.

'It isn't possible,' he murmured, 'that Dunning owned and understood both of these libraries.'

'He understood and conquered gravity,' said Berk. 'And this is the last of the clues we have to show you.'

Dykstra put the books carefully back on the shelves. 'I don't like it.' He glanced back to the other room as if it were a place of terror.

'There's something wrong,' he murmured.'Anti-gravity!

Whoever heard of such a thing? And how could it come out of a place like this?'

IV

That afternoon, they met again in conference. There was agreement that they would tackle the problem. Only Professor Dykstra exhibited a continuing belligerence towards the affair, yet he made no move to withdraw.

Full cooperation of military facilities was pledged by the representatives of the services. The centre of investigation was to be at ONR, however, with branching research wherever needed.

No one had conceived even a tentative starting point which he cared to discuss with his colleagues. Most of them had spent the morning re-reading the relativity papers and staring at the ceiling of their respective offices. They agreed to work as loosely or as closely as the problem demanded. Until some working programme could be initiated by some of them, it was decided to hold daily seminars to try to spark each other into creative thought.

A minor honour came to Mart in his election as chairman of the seminar. It gave him uneasiness because he was junior in age and profession to all of them. But his eminence in electro-fields made him a likely coordinator of the project.

Mart selected a representative sample from the occult section of Dunning's library and took it to his own office. He settled down amid an aura of astrology, spiritualism, mysticism, religion, sunspot data, and levitation. He had no specific purpose, only to expose his own mind to the atmosphere in which Dunning had operated. Dunning had found the goal. The tracks he walked in had to be located, no matter where they were picked up.

Some of the stuff was boring, much could be nothing but sheer delusion. Yet his dogged pursuit left him intrigued by some of the material.

The reports on poltergeism at Leander Castle near London, for example. They were well reported. Independent cross references verified each other very well. The works on levitation were far more difficult to credit. There was a hodgepodge

about purification of the body and the soul, of reaching assorted states of exaltation above the ordinary degree of mortal.

Yet levitation had occurred, according to reports of witnesses who might not be considered too unreliable.

And what did this have to do with religion – in which Dunning had had tremendous interest, to judge by the notations he made?

There were miracles in religion, Mart reflected.

Anti-gravity was a miracle.

Miracle: that which is considered impossible and which cannot be duplicated by the observers, even after it has been seen.

In scientific law there is a difference. It can be applied by anyone with sufficient IQ. But the worker of miracles does not come out of the laboratory or halls of learning.

He rises spontaneously out of the mountains or out of the wilderness, and gathers novices who seek with all their hearts to equal the Master. But they never do. Always there is a difference. The magic of miracles seems unteachable. It has its own spontaneous majesty, or is nothing but old-fashioned hoodwinking. There seemed, to Mart, no in-between.

Anti-gravity.

Was it natural law, or miracle? Had Dunning found the bridge that made only a single category of the two? Or was he a performer of miracles, whose art could not be taught, but would arise spontaneously, full blown?

Mart slammed the books shut and pushed them to the rear of the desk. He pulled a scratch pad out of the drawer and began pencilling furiously the basic Einstein equations.

By the end of the first week there was little to report. The daily seminars had been held, but outside of re-educating each other in the exotic concepts of the relativity world they had achieved nothing.

Or so it seemed to Mart. Keyes seemed quite pleased, however, and Berk mentioned that they should be congratulated on their progress. As if they had taken a major step forward in merely meeting and agreeing to undertake the project.

And maybe they had, Mart thought.

He found himself in difficulty as chairman of the seminar.

Invariably, in such a group there is a member who undertakes to educate his colleagues anew in all the basic sciences. In this case, it was made doubly difficult because the self-appointed instructor was Professor Dykstra.

That he was capable of teaching them a good deal, there was no question. But on the Saturday at the end of this first week he arose with a particularly triumphant expression and strode to the blackboard, where he began scrawling his barely legible chicken marks.

'I have achieved the thing for which I have been looking, gentlemen,' he said. 'I am able to show that no such instrument as we have had described to us is possible without a violation of Dr Einstein's postulate of equivalence. If we admit the correctness of this postulate – as we all do, of course – then you will see from Equation One that—'

Mart stared at – and through – the equations that Dykstra had scrawled. He listened with half an ear. It looked and sounded all right. But something had to be done about Dykstra.

Dykstra was wrong – even with his equations being right. Where was it, thought Mart. It was something you couldn't name or scarcely define. Maybe it was in the *feeling* that Keyes talked about, the feeling that goes all through you down to your toes. He knew what Dykstra's feeling was, all right. It touched him like the proximity of a thousand-ton refrigeration unit going full blast. Dykstra thought they were fools to be monkeying with this project, and remained with it only because he considered it his solemn duty to show them this irrefutable fact.

He was dragging the feet of the whole group. But in spite of him, all the rest were pulling in the other direction, Mart knew. In this week, they had all achieved an acceptance of the validity of Dunning's accomplishment. And that, after all, *was* something of an achievement, he decided.

In Mart's vision, the equations on the board became surrounded by fuzzy signs of the Zodiac. Dykstra had completed his argument and Mart stood up.

'Since you have presented us with such elegant proof of your thesis, doctor,' he said, 'and since we have all become aware of the reality of Dunning's accomplishment, the only

conclusion we can make is that the basic premise is at fault. I would say you have submitted very excellent reasons for doubting the validity of the postulate of equivalence!'

Dykstra stood a moment as if he could not believe his ears. He turned to his seat indecisively as if trying to make up his mind to ignore or answer the statement. Finally, he grew red and his body seemed to swell as he faced Mart.

'My dear Dr Nagle, if there is anyone in this room who does not understand that the postulate of equivalence has been established beyond any possibility of refutation I would suggest that he resign from this project immediately!'

Mart restrained a grin, but warmed to his subject. He had no purpose but to needle Dykstra, and yet—

'Seriously, doctor – and I throw this out to all of you: what would happen if the postulate of equivalence were not true?

'You've been as shocked as I by the items from Dunning's library, but I would like to ask: what is the significance of the postulate of equivalence in the accomplishment of the medium who is able to rise unsupported from a couch, in what is certainly a well authenticated instance of levitation?

'Why is the literature of the East so full of material on levitation? I think Dunning asked that question and got some sensible answers. If the postulate of equivalence doesn't fit those answers, perhaps we had better re-examine the postulate. As a matter of fact, if we ever expect to duplicate Dunning's work, we will have to examine every postulate we've got that pertains in any way to gravity.'

Professor Dykstra abandoned what he considered had become a disorderly argument. He resumed his seat with a grandiose appeal to the equations on the board.

Unexpectedly, Jennings, a thin dry man from Cal Tech, took the floor.

'I agree wholeheartedly with Dr Nagle,' he said. 'Something has been happening to me this past week. I see it in most of you, also, whether you are aware of it or not.

'By the age of forty the average research physicist seems to acquire an intuitive ability to fend off anything that doesn't jibe with the laws as he knows them.

'Then we become heads of departments while the younger fellows come along and assimilate the data that didn't fit in our generation, and get credited with the discoveries we have passed over.

'We seem to establish a sort of gateway in our minds, floodgates if you will, through which the mass of physical universe data flows. As we become older and more learned we adjust the setting of this gate to the point where nothing new can be trapped behind it. We cling to that which we had in our youth and abruptly we are creatures of history.

'I feel the experiences of the past week have jarred my mental floodgates on their very hinges. Once more, I feel able to accept and retain data which I have not encountered before. I think Dr Nagle is right. We have to re-examine all we have learned to this point concerning gravity. If any factors of East Indian lore or spiritualism prove relevant, I do not think physics will be shattered to its foundations if we assimilate such data.

'We cannot escape the fact that one man solved anti-gravity. Eight days ago not one of us would have admitted the possibility. Today we are charged with the responsibility of moving forward in time and catching up with it.'

Mart was tired after that seminar. It became a stormy affair. There seemed a kind of anger submerged not far below the surface of each of them. An anger at themselves for having been on the wrong track for so long, a kind of diffused rage at the whole physical universe for playing such tricks when asked a straightforward question.

More than one had balked at Mart's drastic suggestion. Sanders had said, '. . . and there can be no revision of the postulate of equivalence. Any data which indicates it automatically leaves the observer of that data suspect.'

Mart called Kenneth Berkeley's office as soon as the seminar was ended.

'Hi, Berk,' he said.

'Yeah – how's it coming? I've been wanting to get over your way the last couple of days. I haven't noticed any of you boys moving out into the machine shops yet. I suppose you are still in the paper-work stage.'

'We haven't got *there*, yet,' muttered Mart. 'I have more

important things than anti-gravity to discuss with you. How are you set up for a couple of days' fishing?'

'Fishing? I could probably make it. All work and no play and that sort of thing – I don't need to remind you, of course, of the need for top speed on this Project Levitation—'

'I'm going fishing,' said Mart. 'You coming along or not?'

'I'm coming. I can get the loan of a cabin on the best trout stream the other side of Fulton's Fish Market. When will you be ready?'

'I'll have to rent some gear. If you know a good place, I can be ready in an hour and we can pick it up on the way.'

'I'll have to check my own gear, provided Judith hasn't thrown it out in the last three years since I used it. It's about a two hundred mile drive. We can make it by midnight.'

Mart and Berk had done a good deal of fishing together one summer following their Junior year. They had spent much of that year and all of the summer settling the abstruse problems of the Universe with quite divergent results.

At the end of the summer Mart had been of the total conviction that life was wholly soluble in terms of the external world. If a man had something good and useful to do in shaping the world to his own dream, he would be a sane and happy man.

Berk had arrived at the opposite pole in the conviction that man's life lay within the thin shelter of his own skin. Now each of them had moved a good way towards the other's camp.

Mart thought of this as they drove through the night. He reminded Berk of it.

'If the world were as college Juniors see it, all our troubles would be over,' said Berk. 'There is probably no time in a man's life when he is so completely of a single-minded point of view.'

'I don't know. There's Dykstra. He hasn't changed an opinion since he was a Junior. He's going to prove Dunning didn't have anti-gravity or bust. He knows it can't be done.'

'How about the others?'

'This week has been a period of metamorphosis. They've changed. We're where we can do some work, now.'

There was a caretaker on the property Berk had borrowed.

He had things ready when the two men arrived. Mart determined to put everything connected with ONR out of his mind while he was there. He sat down and wrote a letter home, which helped in that direction.

In the morning he arose in the clear mountain air, and to the enormous song of birds in the pines beyond the house, and he felt that he had truly forgotten all else but this. The smell of bacon and eggs floated in from the kitchen as he met Berk outside the door.

'It's nice to know a psychologist who knows a millionaire. Could we have had breakfast in bed if we had ordered it?'

Berk laughed. 'Not on your life. Wait till Joe gets you out in the woods. Then you'll see how much coddling you'll get.'

'Let's not take him along,' said Mart. 'I'd like to be alone as much as possible.'

'Sure. Joe won't mind. He's the one who knows all the good fishing holes, though—'

'The fish don't matter,' said Mart.

The forest was moist with dew, and the pre-dawn chill remained in the ravines through which they descended towards the river. It was still shadowed by the mountains here, and quiet except for the few birds who had not abandoned its grey light for the pink-tipped hills above.

Mart knew at once that this was what he needed. He donned the hip boots and tested the spring of the new glass rod he had rented.

'I guess I'm old-fashioned,' he said. 'I like the feel of the old ones better.'

'I'm still using mine,' said Berk. 'Matter of fact, I believe it's the same one I had the last summer we were together.'

They sloshed out into the water a little way above a quiet pool. It wasn't wide enough for both of them there, so Mart moved along upstream. 'Some guy published an article the other day,' he said, 'in which he claimed the average time of catching a fish in a stream like this is two hours and nineteen minutes. Didn't we do better than that?'

'Seems like we did a lot better. If we don't, we'll have to get Joe to make a lunch today.'

They did considerably better. By noon, Mart had six and Berk had seven good trout.

'I'll write the fish researcher a letter,' said Mart, 'and your family will eat trout for a week.'

After lunch they sat with their backs against a tree on the bank and watched the water flowing past.

'Have you got any attack on the project at all?' said Berk.

Mart told him about the last seminar. 'Dykstra may be entirely right. His maths makes a pretty picture. But I was serious when I suggested the re-examination of the postulate of equivalence – at least as it now stands.'

'You're ahead of me,' said Berk. 'What is the postulate of equivalence?'

'It was proposed by Einstein in one of his first papers, the 1907 one, I think. He postulated that the effects of inertia are equivalent to those of gravity.

'That is, in an object propelled at a constant rate of acceleration, a man would feel effects that could not be distinguished from those of gravity. He could walk, function, and would have weight just as if he were on a large mass having gravitational attraction.

'Conversely, an observer inside a freely falling elevator in Earth's gravitational field would observe no effects of gravity inside that elevator. He could stand on a scale, and would register no weight. Liquid would not pour from a glass. It has been stated that no mechanical experiment could ever reveal the presence of Earth's gravitational field in the interior of any such frame of reference moving freely in this field of gravitation. We have accepted this assumption for a long time.

'There are good reasons for accepting it, good, sound mathematical reasons. Yet we have not empirically exhausted all possible means of detecting a gravitational field under such conditions, and it is foolish to exclude the possibility.

'So – Dykstra has made a good point in his fairly rigorous demonstration that a mechanism such as Dunning's would demand the abandonment of the postulate of equivalence. It may well be that the postulate is an unwarranted assumption, based upon inadequate data. If so, that's a good starting point. What the next step might be, I don't know.'

'Is gravity a kind of a something that can be identified otherwise than as a mathematical symbol – or through the observation of a falling apple?'

'No. That's all it is, actually. A symbol in our formulas that stands for an unidentified something which manifests itself in the attraction between masses.'

'How about a flowing something, like this stream?'

'Could be. Nobody knows.'

The water eddied about a projecting rock near the bank. Berk threw in a handful of sticks he had been idly breaking, in his hand. Swiftly, they flowed together and converged in the centre of the whirlpool by the rock.

'Might be a point of view,' he said, 'in which it could be postulated that those sticks gravitated towards each other under a mutual attraction.'

'It wasn't attraction in them,' said Mart thoughtfully. 'It was forces pushing and pulling on them. Gravity – a pushing and pulling, maybe. But a pull or a push of what? That Dunning! He knew!'

Sitting on the porch in the dark, after dinner, Mart had a feeling of satisfaction, a vague sense of having accomplished something during the day. He didn't know what, but it didn't matter. It was something—

'You know,' he said suddenly, 'the thing we need to know, and that you psychologists ought to be able to tell us, is where ideas come from.

'Take the first cave man with two brain cells big enough to click together. Where did he get the idea to put a fire in his cave? I think that's the problem you and I tried to solve a long time ago. Where do they come from – inside or outside?' He paused and gave the mosquitoes his attention.

'Keep going,' said Berk.

'I haven't any further to go. I'm thinking about gravity again.'

'What are you thinking?'

'How to get a new idea concerning it. What does a man actually do when he cooks up a new theory, a new mechanism? I feel like I'm being sucked into *that* problem constantly, instead of the one I'm supposed to be attacking.'

'Well, what are you doing? You're trying to cook up a new idea—'

'I'm thinking right now about this afternoon. Something flowing – but it would be something you couldn't get a picture of – like space-time. Now that it's been brought into the open, I think I really have never liked the postulate of equivalence. Just a feeling knocking around through a few molecules in my cranium. The postulate is wrong.

'Then I try to picture something flowing through the dark of space. It couldn't be a three-dimensional flow like a river.'

He sat up straighter and slowly withdrew the cigar from his mouth. 'It couldn't be— But it *could* be a flow—' He stood up suddenly and turned towards the house. 'Look, Berk, you've got to excuse me, if you don't mind. I've got some maths to do.'

Berk's cigar tip brightened in a long, glowing moment. 'Don't mind me,' said the psychologist.

V

Berk had no idea what time Mart went to bed that night. In the morning he found him in the same position working furiously, and had the impression Mart had not retired at all. He observed he'd changed clothes, at least.

'The fish are calling,' said Berk.

Mart glanced up. 'Give me another half hour. Look, the fish can wait. I've got to get back to the office as soon as possible. There's something here I want to keep on with.'

Berk grinned agreeably. 'Go to it, boy. I'll get the car packed. You say when.'

In town he went directly to his own office without seeing anyone. There, he continued the work begun the night before. As he proceeded, some of his initial enthusiasm waned. It would be two or three days before he would be ready to invite inspection. One of his manipulations several pages back turned out to be in error. He retraced slowly through the maze.

A little after three there came a knock. He looked up in irritation as Dykstra walked in.

'Dr Nagle! I'm glad you're in. I tried and couldn't find you yesterday.'

'I took a day off for fishing. Can I help you?'

Dykstra slid into the chair on the other side of the desk with an almost furtive motion. Mart frowned.

'I have something of extreme importance to discuss regarding the project,' said Dykstra. He leaned forward confidentially, his eyes squinting a little behind the owlish glasses.

'Do you realize,' he said, 'that this entire project is a fraud?'

'Fraud! What are you talking about?'

'I have been over the Dunning house, so called, with a fine-toothed comb. I proved to you in our last seminar that the postulate of equivalence denied the possibility of any such device as this Dunning is supposed to have invented. Now, I can assure you that Dunning never existed! We are the victims of a base fraud.'

He clapped the palms of his hands upon the top of the desk in triumphal finality and leaned back.

'I don't understand,' murmured Mart.

'You shall. Go over that laboratory. There is no consistency. Examine the shelves of reagents. Ask what possible chemical endeavour could be carried out with such a random selection of materials. The electronics section is as hodgepodge as the corner television shop. The computers have never been used in the room they are in. And that library – it is obvious what an intellectual packrat's nest that is!

'No, Dr Nagle, for some inconceivable reason we are the victims of a base fraud. Anti-gravity! Do you suppose that anyone here actually thought they could make us believe it?

'Now, what I want to know is why we have been sent on this fool's errand when the nation needs the talents of each one of us so badly?'

Mart felt a faint sickness in the pit of his stomach. 'I'll admit there are strange things about this presentation. If what you say should be true, how can the eyewitness accounts be explained?'

'Perjury!' snapped Dykstra.

'I can hardly imagine a member of the JCS involved in such. I am sorry, but I do not share your opinion. As a matter of fact, I have done a good deal of work towards our goal.

'As of this moment, I am prepared to say definitely that the postulate of equivalence is not going to hold.'

Red-faced, Dykstra stood up. 'I'm extremely sorry you hold such views, Dr Nagle. I had always believed you a young man of great promise. Perhaps you shall yet be when proper light is thrown upon this abominable fraud perpetrated upon us. Good day!'

Mart didn't bother to rise as Dykstra stomped out of the door. The visit bothered him. Absurd as the accusations were, they threatened the foundation upon which he worked. If he could not be sure that Dunning's device had performed as described he was subject to the buffeting of all his prior assurance that anti-gravity was nonsense.

But the JCS involved in a reasonless and silly fraud as Dykstra proposed—!

He turned back to his sheets of computations with almost frantic energy. When it was almost time that most of them would be leaving he reached for the phone and called Jennings. The man was an able mathematician and could work this through if anyone could. It was not as far along as Mart would have liked it, but he had to know if he were at the entrance to a blind alley.

'Can you come over for a moment?' he said. 'I've got something I'd like to show you.'

In a few moments Jennings appeared. As he came in the door he gave Mart the momentary impression of an old-time country preacher ruffled with righteous indignation at the sins of his congregation.

He blurted out before Mart had a chance to speak. 'Did you see Dykstra this afternoon running around with some cock and bull story about the project being a fraud?'

Mart nodded.

'Why Keyes ever let an old fool like him in here – Dyk has been a fine man. But he's shot his wad. I called Keyes at once.'

'I guess all of us have had natural suspicions like Dykstra's,' said Mart, 'but not enough to go completely overboard as he has.'

'I've talked to several of the others. They are upset, some of

them. I tried to lift them out of it. But what is it you've got? Anything that looks like an answer?'

Mart slid the sheets across the desk. 'The postulate of equivalence is out. I'm pretty sure of that. I've been computing the possible field of motion circulating through curved space. It turns out to be an eight-dimensional thing, but it makes sense. I'd like you to look it over.'

Jennings' eyebrows raised. 'Very good. Of course, it's not easy for me to accept the renunciation of the postulate of equivalence, you understand. That has been around for forty-five years now.'

'We may find something to fit in its place.'

'You have no other copy of this?'

Mart shrugged. 'I can do it again.'

'I'll take good care of them.' Jennings put the papers in an inside pocket. 'But suppose you do demonstrate the possibility of such a flow? Where do we go from there? Have you any idea?'

'Some,' said Mart. 'I watched a whirlpool yesterday. Ever watch what happens to sticks when they are thrown into one? They go towards each other. That's gravity.'

Jennings frowned. 'Now wait a minute, Mart—'

Mart laughed. 'Don't get me wrong. Consider this flow. I don't know what properties it might have. It would have to take place through four of the dimensions involved. But when we get through, we'll develop the expression for the curl of such a flow through material substance.

'Suppose such a curl exists. Whirlpools appear. It's crude analogy. Your mind can't get hold of it. We need the math. But perhaps we can show that the curl is in such a direction as to cause a reduction of spatial displacement between masses causing the curl. Could that make sense?'

Jennings had been sitting very still. Now he smiled and spread his hands on the desk top. 'It could. The curl of an eight-dimensional flow would be fairly complex. But if it develops all right, what then?'

'Then we build a device to streamline matter through this flow, so that curl will not develop.'

Jennings sat back in his chair as if suddenly limp. 'Holy

smoke, you've got it all figured out! But wait a minute, that would simply nullify gravity. How about anti-gravity?'

Mart shrugged. 'We find a way to introduce a reverse curl vector.'

'That does it, boy, that does it.'

Mart laughed and walked to the door with him. 'Yeah, I know how the thing sounds, but, look – I'm really not kidding. If this gravitational flow expression works out, the rest of it could follow. It could, Jennings.'

Jennings faced him with all amusement gone out of his face. 'I'm not laughing, Mart,' he said, 'not at you, anyway. If we get the answer to this whole thing it's going to be something like that. It's just that everything we've postulated up to now has so completely blocked any thinking of this kind that a man has to be prepared to consider himself slightly rocky to even talk about it.'

It was a day later when Berk called him. 'Hey, Mart, why didn't you let us know right away about Dykstra? If Jennings hadn't called, we might have got to him too late.'

'What do you mean?'

'This story he's been giving about the project's being a fraud. I hope you weren't bothered by it.'

'Not much. Are you going to kick him off the project?'

'That follows, naturally. He's in a rest home now. His mind was so congealed that he couldn't accept the reality of Dunning's work. He flipped his lid in a mild sort of way. He'll be all right in a few weeks and can go back to teaching.'

'I'm sorry about it. We almost have the answer he was afraid to face, I believe.'

Impatiently, Mart threw his thesis open to the whole seminar that day. It was a bit hard to take for some who had been inclined somewhat in Dykstra's direction, but the maths was clean enough to appeal to all of them. They pitched in almost as a solid unit to try to obtain a formulation convertible to metal and electrons and fields.

Jennings was the one who carried it all the way. He rushed into Mart's office three days later without knocking and slapped some sheets on the desk.

'You were right, Mart,' he exclaimed. 'Your field does show

curl in the presence of material substance. We're on our way to Dunning's flying belt!'

But when it came, Mart was dismayed. The entire group worked in a thirty-six hour seminar to whip the work into final shape. The result was that an anti-gravity machine could be built. But it would be the size of a hundred-ton cyclotron!

Mart told Keyes what they had. 'It's a far cry from Dunning's flying belt,' he said. 'We'll continue trying to boil it down if you want us to, or we can submit a practical design that will work now in the shape we've got it in.'

Keyes glanced at the sketches Mart had prepared. 'It isn't exactly what we'd expected, but I think we'd better build it. The important thing right now is to get a practical anti-gravity machine functioning. Refinements can come later. The shops are yours. How long will it take?'

'It depends on what you wish to put into it in the way of men and machines. With a round-the-clock crew I believe the model could be ready in about three weeks.'

'It's yours,' said Keyes. 'Build it.'

It was actually over four weeks before the first demonstration was scheduled in the big machine shop protected by the triple security seal that had shrouded the whole project.

Those in attendance were the ones present at the first conference plus a few of the workmen who had helped build the massive device.

The demonstration was simple, almost anti-climactic after the hectic seminars they had sweated out the past weeks. Mart stepped to the switchboard that seemed diminutive under the high, steel-arched ceiling of the shop. He threw the main power switches and then adjusted slowly a number of dials.

Almost imperceptibly, and without wavering, the enormous disc-like mass rose in the centre of the shop. It hovered without visible support three feet above the floor.

The disc was thirty feet in diameter and three feet thick. Its tonnage was evident in the long crack in the concrete floor beneath the I-beams laid temporarily to support it.

Dr Keyes reached out a hand to touch the mass. He pushed with all his might.

Mart smiled and shook his head. 'It'll move if you push

long enough and hard enough. But it has almost the inertia of a small battleship. A far cry, as I said, from Dunning's flying belt. But we'll keep trying.'

'It's a monumental achievement,' said Keyes, 'and I congratulate you all.'

While they watched, Mart touched the controls again and slowly lowered the mass to the I-beam supports. He cut the power.

'I would like all of you to return to the conference room at this time,' Keyes said. 'There, we have some additional data to give you.'

Mart fell in step beside Berk on the way out. 'What's up now?' he said. 'Are they going to pin tin medals on us?'

'Better than that,' said Berk. 'You'll see.'

Once more they found themselves seated almost as they had been that eventful day weeks ago. Keyes took his usual position at the head.

'There is no need of telling any of you gentlemen what this achievement means to our country and for all mankind. Anti-gravity will revolutionize the military and peacetime transport of the world – and in time will take man to the stars.

'Now – I have someone I would like to introduce to you.'

He stepped aside and beckoned through the doorway to the next room behind him. Someone came through in response. Then Keyes stood aside.

A startled gasp went through the audience. Before them stood Leon Dunning.

He smiled at the group a little wryly. 'I see you know me, gentlemen. I hope none of you will bear me any hard feelings or consider me the repulsive character I have been painted. The script called for it. An unpleasant young jerk, is the way it was described, I believe.'

Jennings was on his feet. 'What is the meaning of this, Dr Keyes? I think we are entitled to an explanation!'

'Indeed you are, Dr Jennings. And you shall have one.' Keyes replaced Dunning, who took a seat. 'To a considerable extent, our friend, Professor Dykstra, was correct. The original data given you at the beginning of this project was a hoax.'

A wave of startled cries and protests arose from the assembly. Keyes raised a hand. 'Just a moment, please. Hear me out. I said that the initial data was a hoax. There was no Leon Dunning, inventor of anti-gravity devices. We put on a show, and faked a film. There was no anti-gravity.

'Today, there is an anti-gravity machine in existence. I want you to consider very carefully, gentlemen, just where the hoax in this matter truly lies.' He paused for a moment, looking into the eyes of each of them, then stepped aside. 'Our chief psychologist, Dr Kenneth Berkeley, will give you the remainder of the story.'

Berk got to his feet and moved to the front as if reluctant to do what had to be done.

'If any of you are angry,' he said, 'I am the person to whom it should be directed. Project Levitation was the direct result of my proposal.

'Do not think, however, that I am apologizing. I object to the term hoax, or fraud, which Professor Dykstra called it. How can we call it a hoax when out of it has come a thing with potentialities that cannot be grasped by any of us at this time?'

'But why, man, why?' Jennings exploded impatiently. 'Why this hocus-pocus, this nonsense, this irrelevance about astrology, levitation, and mysticism! Why wasn't it set up as a straightforward project. We aren't a bunch of high school kids to be tricked into something we don't want to do!'

'Suppose you give me the answer to that?' said Berk. 'How would you have responded to a letter from Dr Keyes inviting you to take part in a project to build an anti-gravity machine? How many of you would have remained in your safe and sane universities where crackpots are not allowed to spend the people's money as they are in Government institutions?

'We are thankful we had no more than one Professor Dykstra on the project. He refused to accept the data we provided and his goal became to prove anti-gravity impossible. How many of you would have come with the same goal if our little make-believe had not spurred you on?

'Dykstra could not face the data in a rational manner. As a result he suffered a nervous breakdown, which was, of course, the result of a long chain of previous incidents.

'On the other hand, those of you who could accept the data we handed you were able to knock out the pre-conceptions about anti-gravity and achieve that which you had considered impossible.

'Essentially, this was a project in psychology, not physics. We could have chosen something besides anti-gravity. The results, I predict, would have been the same. I have observed many scientists at work in the laboratory and library. I have studied the educational preconceptions they bring to their work. Before a problem is tackled, a decision is already made as to whether it is possible or impossible. In so many cases, as exemplified by Professor Dykstra, the interest in the problem is only to the extent of proving the decision correct.

'If you will forgive me for using you for guinea pigs in my project, I submit to you that I have given a far more powerful technique for scientific investigation than you have ever possessed before. The technique of the conviction that any desired answer can be found. You have not been hoaxed at all. You have been shown a new and powerful scientific method.

'If you could and did lick a problem previously impossible to you, in a matter of weeks, how many more of your own research problems are just waiting for this new approach?'

There was a good deal more said at the meeting. Some of it was highly confused. Berk's explanation was not understood at all by several of them.

It would take a long time for it to sink in thoroughly, even for him, Mart thought. There was just a trace of anger within him that he found hard to put down. But he chuckled at the smooth way in which Berk had engineered the project. He'd bet the psychologist had had some uneasy moments because of Dykstra!

There was a sort of stunned feeling in his mind as he began to recognize the absolute truth of what Berk had demonstrated. He saw it reflected in the faces of some of the others, a sort of blank, why-didn't-somebody-tell-me-this-before look.

It was finally agreed they would meet again the next day to thresh out their reactions to what had been done.

As soon as they were able to break away, Berk took Mart's

arm. 'I almost forgot to tell you, you are invited to dinner tonight.'

'*That* had better not be a hoax,' said Mart.

After dinner, the two of them went out into the patio with which Berk struggled to give his city lot the dignity of an estate. They sat down on a garden seat and watched the moon come up through the neighbour's television antenna.

'I want the rest of it,' said Mart.

'The rest of what?'

'Don't be coy. The rest of the guys are going to get it out of you in the morning, but I want it first.'

Berk was silent for a while; then he started speaking. He lit a pipe and got it going well. 'Jennings almost had it in that speech about the floodgates of the mind which you mentioned. You and I almost had it back there when we were trying to solve the problems of the Universe in school.

'It boils down to the thing you asked me up in the mountains: what is the process of thinking? Where does original thought come from?

'Consider the abstruse equations you cooked up in a matter of days on the gravitational flow around the curvature of space. Why didn't you do it ten years ago? Why didn't somebody else do it a long time ago? Why you, and nobody else?

'I wanted you on the project especially, Mart, because I want you to give me a hand with this thing, if you will. It's a little more than I can handle. I don't know whether it's physics or psychology or some weird cross between the two.

'Anyway, here's where I started: you know communication theory. You know that any kind of data can be put in code form consisting of pulses. For example, a complex photograph codified in terms of half-tone dots. There are many possible methods of coding information into pulses. The code can use dot-dash, it can use time-separation between pulses, it can use pulse amplitude, a thousand different factors and combinations of factors. But *any* information can be expressed as a special sequence of pulses.

'One such sequence is: "Every body in the universe attracts every other body in the universe"; another, "The secret of

immorality is—", and still another, "Gravity is itself the result of the action of – and it can be nullified by—'

'*Any* answer to *any* question can be expressed in terms of a special sequence of pulses, wherein some relationship between the pulses is a codified expression of the information.

'But, by definition, pure noise is a completely random sequence of pulses, containing pulses in all possible relationships.

'Therefore: any information-bearing message is a special sub-class of the class "noise". Pure noise, therefore, includes all possible messages, all possible information. Hence, pure noise, which is actually another term for pure probability, is omniscient!

'Now, that isn't just an exercise in scholastic logic. It is a recognition that all things can be learned, all things can be achieved.'

Mart stirred and blew a violent cloud of cigar smoke at the moon. 'Hold it!' he exclaimed. 'There's got to be some limit to the territory you take in.'

'Why? Is my logic wrong in regard to noise and information?'

'Gad, I don't know. It sounds good. It's right, of course, but exactly what does that have to do with the operation of the human mind and Project Levitation?'

'From a structural standpoint, I can't answer that question – yet. Functionally, it appears that there must be in the human mind a mechanism which is nothing but a pure noise generator, a producer of random impulses, pure omniscient noise.

'Somewhere else there must be another mechanism which is set to either filter the production of random noise or control its production so that only semantically meaningful forms are allowed to come through. Evidently, the filter is capable of being set at any level to filter out anything we choose to define as noise.

'So we go through the rough process of growing up, we go to school, and get educated, we get a red line setting on the noise filter which rejects all but a bare minimum of data presented by the external universe, and our internal creativeness as well.

'Facts in the world about us are rejected from then on when they don't fit. Creative imagination is whittled down. The filter takes care of it automatically once we give it a setting.'

'And your project here,' said Mart, 'the stuff on Babylonian mysticism, astrology, and the rest of that crud—'

'The whole pattern was set to be as noisy as possible,' said Berk. '*We* didn't know how to produce anti-gravity, so we gave you a picture of a man who did, and made it as noisy as possible to loosen up your own noise filters on the subject. I offered you a dose of omniscient noise on the subject of anti-gravity, and the one inescapable conclusion that it had been done.

'Everyone of you had previously set your filters to reject the idea of anti-gravity. Nonsense! No use looking for that. Work on something useful.

'So I suggested to Keyes we assemble a bunch of you double-domes and slap you solidly with the fact that it ain't nonsense, it can be done, Bud. Give you some omniscient noise to listen to, loosen up your filters, and let the answer come through out of your own mental productiveness.

'It worked. It always will work. All you've got to do is get the lead out of your pants and the rocks out of your head, and the arbitrary noise filter settings corrected on a few of the other things you've always wanted to do – and you can find a proper answer to any problem you care to investigate!'

Mart glanced up at the moon spreading silver across the sky. 'Yeah – there's the stars,' he said. 'I've always wanted the stars. Now we've got anti-gravity—'

'And so you can go to the stars – if you want to.'

Mart shook his head. 'You and Dunning – first we've got it, then we haven't.

'You get us to produce anti-gravity. And it becomes a mere gimmick! Sure we could see the planets, maybe even go beyond the solar system before we die. But I guess I'm going to stay here and work with you. A paltry planet or two isn't so much, after all. If we could learn to utilize the maximum noise level of the human mind we could master the whole Universe!'

GRANDPA

by *James H. Schmitz*

A GREEN-WINGED, downy thing as big as a hen fluttered along the hillside to a point directly above Cord's head and hovered there, twenty feet above him. Cord, a fifteen-year-old human being, leaned back against a skipboat parked on the equator of a world that had known human beings for only the past four Earth-years, and eyed the thing speculatively. The thing was, in the free and easy terminology of the Sutang Colonial Team, a swamp bug. Concealed in the downy fur back of the bug's head was a second, smaller, semiparasitical thing, classed as a bug rider.

The bug itself looked like a new species to Cord. Its parasite might or might not turn out to be another unknown. Cord was a natural research man; his first glimpse of the odd flying team had sent endless curiosities thrilling through him. How did that particular phenomenon tick, and why? What fascinating things, once you'd learned about it, could you get it to *do*?

Normally, he was hampered by circumstances in carrying out any such investigation. The Colonial Team was a practical, hard-working outfit – two thousand people who'd been given twenty years to size up and tame down the brand-new world of Sutang to the point where a hundred thousand colonists could be settled on it, in reasonable safety and comfort. Even junior colonial students like Cord were expected to confine their curiosity to the pattern of research set up by the Station to which they were attached. Cord's inclination towards independent experiments had got him into disfavour with his immediate superiors before this.

He sent a casual glance in the direction of the Yoger Bay Colonial Station behind him. No signs of human activity about that low, fortresslike bulk in the hill. Its central lock was still

closed. In fifteen minutes, it was scheduled to be opened to let out the Planetary Regent, who was inspecting the Yoger Bay Station and its principal activities today.

Fifteen minutes was time enough to find out something about the new bug, Cord decided.

But he'd have to collect it first.

He slid out one of the two handguns holstered at his side. This one was his own property: a Vanadian projectile weapon. Cord thumbed it to position for anaesthetic small-game missiles and brought the hovering swamp bug down, drilled neatly and microscopically through the head.

As the bug hit the ground, the rider left its back. A tiny scarlet demon, round and bouncy as a rubber ball, it shot towards Cord in three long hops, mouth wide to sink home inch-long, venom-dripping fangs. Rather breathlessly, Cord triggered the gun again and knocked it out in mid-leap. A new species, all right! Most bug riders were harmless plant eaters, mere suckers of vegetable juice—

'*Cord!*' A feminine voice.

Cord swore softly. He hadn't heard the central lock click open. She must have come around from the other side of the station.

'Hi, Grayan!' he shouted innocently without looking around. 'Come see what I got! New species!'

Grayan Mahoney, a slender, black-haired girl two years older than himself, came trotting down the hillside towards him. She was Sutang's star colonial student, and the station manager, Nirmond, indicated from time to time that she was a fine example for Cord to pattern his own behaviour on. In spite of that, she and Cord were good friends, but she bossed him around considerably.

'Cord, you dope!' she scowled as she came up. 'Quit acting like a collector! If the Regent came out now, you'd be sunk. Nirmond's been telling her about you!'

'Telling her what?' Cord asked, startled.

'For one,' Grayan reported, 'that you don't keep up on your assigned work. Two, that you sneak off on one-man expeditions of your own at least once a month and have to be rescued—'

'Nobody,' Cord interrupted hotly, 'has had to rescue me yet!'

'How's Nirmond to know you're alive and healthy when you just drop out of sight for a week?' Grayan countered. 'Three,' she resumed, checking the items off on slim finger-tips, 'he complained that you keep private zoological gardens of unidentified and possibly deadly vermin in the woods back of the station. And four . . . well, Nirmond simply doesn't want the responsibility for you any more!' She held up the four fingers significantly.

'Golly!' gulped Cord, dismayed. Summed up tersely like that, his record *didn't* look too good.

'Golly, is right! I keep warning you! Now Nirmond wants the Regent to send you back to Vanadia – and there's a starship coming in to New Venus forty-eight hours from now!' New Venus was the Colonial Team's main settlement on the opposite side of Sutang.

'What'll I do?'

'Start acting like you had good sense mainly.' Grayan grinned suddenly. 'I talked to the Regent, too – Nirmond isn't rid of you yet! But if you louse up on our tour of the Bay Farms today, you'll be off the Team for good!'

She turned to go. 'You might as well put the skipboat back; we're not using it. Nirmond's driving us down to the edge of the bay in a treadcar, and we'll take a raft from there. Don't let them know I warned you!'

Cord looked after her, slightly stunned. He hadn't realized his reputation had become as bad as all that! To Grayan, whose family had served on Colonial Teams for the past four generations, nothing worse was imaginable than to be dismissed and sent back ignominiously to one's own home-world. Much to his surprise, Cord was discovering now that he felt exactly the same way about it!

Leaving his newly bagged specimens to revive by themselves and flutter off again, he hurriedly flew the skipboat around the station and rolled it back into its stall.

Three rafts lay moored just offshore in the marshy cove at the edge of which Nirmond had stopped the treadcar. They looked somewhat like exceptionally broad-brimmed, well-worn

sugar-loaf hats floating out there, green and leathery. Or like lily pads twenty-five feet across, with the upper section of a big, grey-green pineapple growing from the centre of each. Plant animals of some sort. Sutang was too new to have had its phyla sorted out into anything remotely like an orderly classification. The rafts were a local oddity which had been investigated and could be regarded as harmless and moderately useful. Their usefulness lay in the fact that they were employed as a rather slow means of transportation about the shallow, swampy waters of the Yoger Bay. That was as far as the Team's interest in them went at present.

The Regent had stood up from the back seat of the car, where she was sitting next to Cord. There were only four in the party; Grayan was up front with Nirmond.

'Are those our vehicles?' The Regent sounded amused.

Nirmond grinned, a little sourly. 'Don't underestimate them, Dane! They could become an important economic factor in this region in time. But, as a matter of fact, these three are smaller than I like to use.' He was peering about the reedy edges of the cove. 'There's a regular monster parked here usually—'

Grayan turned to Cord. 'Maybe Cord knows where Grandpa is hiding.'

It was well-meant, but Cord had been hoping nobody would ask him about Grandpa. Now they all looked at him.

'Oh, you want Grandpa?' he said, somewhat flustered. 'Well, I left him . . . I mean I saw him a couple of weeks ago about a mile south from here—'

Grayan sighed. Nirmond grunted and told the Regent, 'The rafts tend to stay wherever they're left, providing it's shallow and muddy. They use a hair-root system to draw chemicals and microscopic nourishment directly from the bottom of the bay. Well – Grayan, would you like to drive us there?'

Cord settled back unhappily as the treadcar lurched into motion. Nirmond suspected he'd used Grandpa for one of his unauthorized tours of the area, and Nirmond was quite right.

'I understand you're an expert with these rafts, Cord,' Dane said from beside him. 'Grayan told me we couldn't find a better steersman, or pilot, or whatever you call it, for our trip today.'

'I can handle them,' Cord said, perspiring. 'They don't give you any trouble!' He didn't feel he'd made a good impression on the Regent so far. Dane was a young, handsome-looking woman with an easy way of talking and laughing, but she wasn't the head of the Sutang Colonial Team for nothing. She looked quite capable of shipping out anybody whose record wasn't up to par.

'There's one big advantage our beasties have over a skipboat, too,' Nirmond remarked from the front seat. 'You don't have to worry about a snapper trying to climb on board with you!' He went on to describe the stinging ribbon-tentacles the rafts spread around them under water to discourage creatures that might make a meal off their tender underparts. The snappers and two or three other active and aggressive species of the bay hadn't yet learned it was foolish to attack armed human beings in a boat, but they would skitter hurriedly out of the path of a leisurely perambulating raft.

Cord was happy to be ignored for the moment. The Regent, Nirmond and Grayan were all Earth people, which was true of most of the members of the Team; and Earth people made him uncomfortable, particularly in groups. Vanadia, his own home world, had barely graduated from the status of Earth colony itself, which might explain the difference. All the Earth people he'd met so far seemed dedicated to what Grayan Mahoney called the Big Picture, while Nirmond usually spoke of it as 'Our Purpose Here'. They acted strictly in accordance with their Team Regulations – sometimes, in Cord's opinion, quite insanely. Because now and then the Regulations didn't quite cover a new situation, and then somebody was likely to get killed. In which case, the Regulations would be modified promptly, but Earth people didn't seem otherwise disturbed by such events.

Grayan had tried to explain it to Cord:

'We can't really ever *know* in advance what a new world is going to be like! And once we're there, there's too much to do, in the time we've got, to study it inch by inch. You get your job done, and you take a chance. But if you stick by the Regulations you've got the best chances of surviving anybody's been able to figure out for you—'

Cord felt he preferred to just use good sense and not let Regulations or the job get him into a situation he couldn't figure out for himself.

To which Grayan replied impatiently that he hadn't yet got the Big Picture—

The treadcar swung around and stopped, and Grayan stood up in the front seat, pointing. 'That's Grandpa, over there!'

Dane also stood up and whistled softly, apparently impressed by Grandpa's fifty-foot spread. Cord looked around in surprise. He was pretty sure this was several hundred yards from the spot where he'd left the big raft two weeks ago; and, as Nirmond said, they didn't usually move about by themselves.

Puzzled, he followed the others down a narrow path to the water, hemmed in by tree-sized reeds. Now and then he got a glimpse of Grandpa's swimming platform, the rim of which just touched the shore. Then the path opened out, and he saw the whole raft lying in sunlit, shallow water; and he stopped short, startled.

Nirmond was about to step up on the platform, ahead of Dane.

'Wait!' Cord shouted. His voice sounded squeaky with alarm. 'Stop!'

He came running forward.

They had frozen where they stood, looked around swiftly. Then glanced back at Cord coming up. They were well-trained.

'What's the matter, Cord?' Nirmond's voice was quiet and urgent.

'Don't get on that raft – it's changed!' Cord's voice sounded wobbly, even to himself. 'Maybe it's not even Grandpa—'

He saw he was wrong on the last point before he'd finished the sentence. Scattered along the rim of the raft were dis-coloured spots left by a variety of heat-guns, one of which had been his own. It was the way you goaded the sluggish and mindless things into motion. Cord pointed at the cone-shaped central projection. 'There – his head! He's sprouting!'

'Sprouting?' the station manager repeated uncomprehendingly. Grandpa's head, as befitted his girth, was almost twelve

feet high and equally wide. It was armour-plated like the back of a saurian to keep off plant suckers, but two weeks ago it had been an otherwise featureless knob, like those on all other rafts. Now scores of long, kinky, leafless vines had grown out from all surfaces of the cone, like green wires. Some were drawn up like tightly coiled springs, others trailed limply to the platform and over it. The top of the cone was dotted with angry red buds, rather like pimples, which hadn't been there before either. Grandpa looked unhealthy.

'Well,' Nirmond said, 'so it is. Sprouting!' Grayan made a choked sound. Nirmond glanced at Cord as if puzzled. 'Is that all that was bothering you, Cord?'

'Well, sure!' Cord began excitedly. He hadn't caught the significance of the word 'all'; his hackles were still up, and he was shaking. 'None of them ever—'

Then he stopped. He could tell by their faces that they hadn't got it. Or rather, that they'd got it all right but simply weren't going to let it change their plans. The rafts were classified as harmless, according to the Regulations. Until proved otherwise, they would continue to be regarded as harmless. You didn't waste time quibbling with the Regulations – apparently even if you were the Planetary Regent. You didn't feel you had the time to waste.

He tried again. 'Look—' he began. What he wanted to tell them was that Grandpa with one unknown factor added wasn't Grandpa any more. He was an unpredictable, oversized life form, to be investigated with cautious thoroughness till you knew what the unknown factor meant.

But it was no use. They knew all that. He stared at them helplessly. 'I—"

Dane turned to Nirmond. 'Perhaps you'd better check,' she said. She didn't add, '—to reassure the boy!' but that was what she meant.

Cord felt himself flushing terribly. They thought he was scared – which he was – and they were feeling sorry for him, which they had no right to do. But there was nothing he could say or do now except watch Nirmond walk steadily across the platform. Grandpa shivered slightly a few times, but the rafts always did that when someone first stepped on them. The sta-

tion manager stopped before one of the kinky sprouts, touched it and then gave it a tug. He reached up and poked at the lowest of the budlike growths. 'Odd-looking things!' he called back. He gave Cord another glance. 'Well, everything seems harmless enough, Cord. Coming aboard, everyone?'

It was like dreaming a dream in which you yelled and yelled at people and couldn't make them hear you! Cord stepped up stiff-legged on the platform behind Dane and Grayan. He knew exactly what would have happened if he'd hesitated even a moment. One of them would have said in a friendly voice, careful not to let it sound too contemptuous: 'You don't have to come along if you don't want to, Cord!'

Grayan had unholstered her heat-gun and was ready to start Grandpa moving out into the channels of the Yoger Bay.

Cord hauled out his own heat-gun and said roughly, 'I was to do that!'

'All right, Cord.' She gave him a brief, impersonal smile as if he were someone she'd met for the first time that day, and stood aside.

They were so infuriatingly polite! He was, Cord decided, as good as on his way back to Vanadia right now.

For a while, Cord almost hoped that something awesome and catastrophic would happen promptly to teach the Team people a lesson. But nothing did. As always, Grandpa shook himself vaguely and experimentally when he felt the heat on one edge of the platform and then decided to withdraw from it, all of which was standard procedure. Under the water, out of sight, were the raft's working sections: short, thick leaf-structures shaped like paddles and designed to work as such, along with the slimy nettle-streamers which kept the vegetarians of the Yoger Bay away, and a jungle of hair roots through which Grandpa sucked nourishment from the mud and the sluggish waters of the bay and with which he also anchored himself.

The paddles started churning, the platform quivered, the hair roots were hauled out of the mud; and Grandpa was on his ponderous way.

Cord switched off the heat, reholstered his gun, and stood up. Once in motion, the rafts tended to keep travelling

unhurriedly for quite a while. To stop them, you gave them a touch of heat along their leading edge; and they could be turned in any direction by using the gun lightly on the opposite side of the platform.

It was simple enough. Cord didn't look at the others. He was still burning inside. He watched the reed beds move past and open out, giving him glimpses of the misty, yellow and green and blue expanse of the brackish bay ahead. Behind the mist, to the west, were the Yoger Straits, tricky and ugly water when the tides were running; and beyond the Straits lay the open sea, the great Zlanti Deep, which was another world entirely and one of which he hadn't seen much as yet.

Suddenly he was sick with the full realization that he wasn't likely to see any more of it now! Vanadia was a pleasant enough planet; but the wildness and strangeness were long gone from it. It wasn't Sutang.

Grayan called from beside Dane, 'What's the best route from here into the farms, Cord?'

'The big channel to the right,' he answered. He added somewhat sullenly. 'We're headed for it!'

Grayan came over to him. 'The Regent doesn't want to see all of it,' she said, lowering her voice. 'The algae and plankton beds first. Then as much of the mutated grains as we can show her in about three hours. Steer for the ones that have been doing best, and you'll keep Nirmond happy!'

She gave him a conspiratorial wink. Cord looked after her uncertainly. You couldn't tell from her behaviour that anything was wrong. Maybe—

He had a flare of hope. It was hard not to like the Team people, even when they were being rock-headed about their Regulations. Perhaps it was that purpose that gave them their vitality and drive, even though it made them remorseless about themselves and everyone else. Anyway, the day wasn't over yet. He might still redeem himself in the Regent's opinion. Something might happen—

Cord had a sudden cheerful, if improbable, vision of some bay monster plunging up on the raft with snapping jaws; and of himself alertly blowing out what passed for the monster's brains before anyone else – Nirmond, in particular – was even

aware of the threat. The bay monsters shunned Grandpa, of course, but there might be ways of tempting one of them.

So far, Cord realized, he'd been letting his feelings control him. It was time to start thinking!

Grandpa first. So he'd sprouted – green vines and red buds, purpose unknown, but with no change observable in his behaviour-patterns otherwise. He was the biggest raft in this end of the bay, though all of them had been growing steadily in the two years since Cord had first seen one. Sutang's seasons changed slowly; its year was somewhat more than five Earth-years long. The first Team members to land here hadn't yet seen a full year pass.

Grandpa then was showing a seasonal change. The other rafts, not quite so far developed, would be reacting similarly a little later. Plant animals – they might be blossoming, preparing to propagate.

'Grayan,' he called, 'how do the rafts get started? When they're small, I mean.'

Grayan looked pleased; and Cord's hopes went up a little more. Grayan was on his side again anyway!

'Nobody knows yet,' she said. 'We were just talking about it. About half of the coastal marsh-fauna of the continent seems to go through a preliminary larval stage in the sea.' She nodded at the red buds on the raft's cone. 'It *looks* as if Grandpa is going to produce flowers and let the wind or tide take the seeds out through the Straits.'

It made sense. It also knocked out Cord's still half-held hope that the change in Grandpa might turn out to be drastic enough, in some way, to justify his reluctance to get on board. Cord studied Grandpa's armoured head carefully once more – unwilling to give up that hope entirely. There was a series of vertical gummy black slits between the armour plates, which hadn't been in evidence two weeks ago either. It looked as if Grandpa were beginning to come apart at the seams. Which might indicate that the rafts, big as they grew to be, didn't outlive a full seasonal cycle, but came to flower at about this time of Sutang's year, and died. However, it was a safe bet that Grandpa wasn't going to collapse into senile decay before they completed their trip today.

Cord gave up on Grandpa. The other notion returned to him – perhaps he *could* coax an obliging bay monster into action that would show the Regent he was no sissy!

Because the monsters were there, all right.

Kneeling at the edge of the platform and peering down into the wine-coloured, clear water of the deep channel they were moving through, Cord could see a fair selection of them at almost any moment.

Some five or six snappers, for one thing. Like big, flattened crayfish, chocolate-brown mostly, with green and red spots on their carapaced backs. In some areas they were so thick you'd wonder what they found to live on, except that they ate almost anything, down to chewing up the mud in which they squatted. However, they preferred their food in large chunks and alive, which was one reason you didn't go swimming in the bay. They would attack a boat on occasion; but the excited manner in which the ones he saw were scuttling off towards the edges of the channel showed they wanted to have nothing to do with a big, moving raft.

Dotted across the bottom were two-foot round holes which looked vacant at the moment. Normally, Cord knew, there would be a head filling each of those holes. The heads consisted mainly of triple sets of jaws, held open patiently like so many traps to grab at anything that came within range of the long, wormlike bodies behind the heads. But Grandpa's passage, waving his stingers like transparent pennants through the water, had scared the worms out of sight, too.

Otherwise, mostly schools of small stuff – and then a flash of wicked scarlet, off to the left behind the raft, darting out from the reeds! Turning its needle-nose into their wake.

Cord watched it without moving. He knew that creature, though it was rare in the bay and hadn't been classified. Swift, vicious – alert enough to snap swamp bugs out of the air as they fluttered across the surface. And he'd tantalized one with fishing tackle once into leaping up on a moored raft, where it had flung itself about furiously until he was able to shoot it.

No fishing tackle. A handkerchief might just do it, if he cared to risk an arm—

'What fantastic creatures!' Dane's voice just behind him.

'Yellowheads,' said Nirmond. 'They've got a high utility rating. Keep down the bugs.'

Cord stood up casually. It was no time for tricks! The reed bed to their right was thick with Yellowheads, a colony of them. Vaguely froggy things, man-sized and better. Of all the creatures he'd discovered in the bay, Cord liked them least. The flabby, sacklike bodies clung with four thin limbs to the upper sections of the twenty-foot reeds that lined the channel. They hardly ever moved, but their huge, bulging eyes seemed to take in everything that went on about them. Every so often, a downy swamp bug came close enough; and a Yellowhead would open its vertical, enormous, tooth-lined slash of a mouth, extend the whole front of its face like a bellows in a flashing strike; and the bug would be gone. They might be useful, but Cord hated them.

'Ten years from now we should know what the cycle of coastal life is like,' Nirmond said. 'When we set up the Yoger Bay Station there were no Yellowheads here. They came the following year. Still with traces of the oceanic larval form; but the metamorphosis was almost complete. About twelve inches long—'

Dane remarked that the same pattern was duplicated endlessly elsewhere. The Regent was inspecting the Yellowhead colony with field glasses; she put them down now, looked at Cord and smiled. 'How far to the farms?'

'About twenty minutes.'

'The key,' Nirmond said, 'seems to be the Zlanti Basin. It must be almost a soup of life in spring.'

'It is,' nodded Dane, who had been here in Sutang's spring, four Earth-years ago. 'It's beginning to look as if the Basin alone might justify colonization. The question is still' – she gestured towards the Yellowheads – 'how do creatures like that get there?'

They walked off towards the other side of the raft, arguing about ocean currents. Cord might have followed. But something splashed back of them, off to the left and not too far back. He stayed, watching.

After a moment, he saw the big Yellowhead. It had slipped down from its reedy perch, which was what had caused the

splash. Almost submerged at the water line, it stared after the raft with huge, pale-green eyes. To Cord, it seemed to look directly at him. In that moment, he knew for the first time why he didn't like Yellowheads. There was something very like intelligence in that look, an alien calculation. In creatures like that, intelligence seemed out of place. What use could they have for it?

A little shiver went over him when it sank completely under the water and he realized it intended to swim after the raft. But it was mostly excitement. He had never seen a Yellowhead come down out of the reeds before. The obliging monster he'd been looking for might be presenting itself in an unexpected way.

Half a minute later, he watched it again, swimming awkwardly far down. It had no immediate intention of boarding, at any rate. Cord saw it come into the area of the raft's trailing stingers. It manoeuvred its way between them with curiously human swimming motions, and went out of sight under the platform.

He stood up, wondering what it meant. The Yellowhead had appeared to know about the stingers; there had been an air of purpose in every move of its approach. He was tempted to tell the others about it, but there was the moment of triumph he could have if it suddenly came slobbering up over the edge of the platform and he nailed it before their eyes.

It was almost time anyway to turn the raft in towards the farms. If nothing happened before then—

He watched. Almost five minutes, but no sign of the Yellowhead. Still wondering, a little uneasy, he gave Grandpa a calculated needling of heat.

After a moment, he repeated it. Then he drew a deep breath and forgot all about the Yellowhead.

'Nirmond!' he called sharply.

The three of them were standing near the centre of the platform, next to the big armoured cone, looking ahead at the farms. They glanced around.

'What's the matter now, Cord?'

Cord couldn't say it for a moment. He was suddenly, terribly scared again. Something *had* gone wrong!

'The raft won't turn!' he told them.

'Give it a real burn this time!' Nirmond said.

Cord glanced up at him. Nirmond, standing a few steps in front of Dane and Grayan as if he wanted to protect them, had begun to look a little strained, and no wonder. Cord already had pressed the gun to three different points on the platform; but Grandpa appeared to have developed a sudden anaesthesia for heat. They kept moving out steadily towards the centre of the bay.

Now Cord held his breath, switched the heat on full and let Grandpa have it. A six-inch patch on the platform blistered up instantly, turned brown, then black—

Grandpa stopped dead. Just like that.

'That's right! Keep burn—' Nirmond didn't finish his order.

A giant shudder. Cord staggered back towards the water. Then the whole edge of the raft came curling up behind him and went down again, smacking the bay with a sound like a cannon shot. He flew forward off his feet, hit the platform face down and flattened himself against it. It swelled up beneath him. Two more enormous slaps and joltings. Then quiet. He looked round for the others.

He lay within twelve feet of the central cone. Some twenty or thirty of the mysterious new vines the cone had sprouted were stretched out stiffly towards him now, like so many thin green fingers. They couldn't quite reach him. The nearest tip was still ten inches from his shoes.

But Grandpa had caught the others, all three of them. They were tumbled together at the foot of the cone, wrapped in a stiff network of green vegetable ropes, and they didn't move.

Cord drew his feet up cautiously, prepared for another earthquake reaction, but nothing happened. Then he discovered that Grandpa was back in motion on his previous course. The heat-gun had vanished. Gently, he took out the Vanadian gun.

A voice, thin and pain-filled, spoke to him from one of the three huddled bodies.

'Cord? It didn't get you?' It was the Regent.

'No,' he said, keeping his voice low. He realized suddenly he'd simply assumed they were all dead. Now he felt sick and shaky.

'What are you doing?'

Cord looked at Grandpa's big, armour-plated head with a certain hunger. The cones were hollowed out inside; the station's lab had decided their chief function was to keep enough air trapped under the rafts to float them. But in that central section was also the organ that controlled Grandpa's overall reactions.

He said softly, 'I got a gun and twelve heavy-duty explosive bullets. Two of them will blow that cone apart.'

'No good, Cord!' the pain-racked voice told him. 'If the thing sinks, we'll die anyway. You have anaesthetic charges for that gun of yours?'

He stared at her back. 'Yes.'

'Give Nirmond and the girl a shot each, before you do anything else. Directly into the spine, if you can. But don't come any closer—'

Somehow, Cord couldn't argue with that voice. He stood up carefully. The gun made two soft spitting sounds.

'All right,' he said hoarsely. 'What do I do now?'

Dane was silent a moment. 'I'm sorry, Cord, I can't tell you that. I'll tell you what I can—'

She paused for some seconds again.

'This thing didn't try to kill us, Cord. It could have easily. It's incredibly strong. I saw it break Nirmond's legs. But as soon as we stopped moving, it just held us. They were both unconscious then—

'You've got that to go on. It was trying to pitch you within reach of its vines or tendrils, or whatever they are, too, wasn't it?'

'I think so,' Cord said shakily. That was what had happened, of course; and at any moment Grandpa might try again.

'Now it's feeding us some sort of anaesthetic of its own through those vines. Tiny thorns. A sort of numbness—' Dane's voice trailed off a moment. Then she said clearly, 'Look, Cord – it seems we're food it's storing up! You get that?'

'Yes,' he said.

'Seeding time for the rafts. There are analogues. Live food for its seed probably; not for the raft. One couldn't have counted on that. Cord?'

'Yes. I'm here.'

'I want,' said Dane, 'to stay awake as long as I can. But there's really just one other thing – this raft's going somewhere. To some particularly favourable location. And that might be very near shore. You might make it in then; otherwise it's up to you. But keep your head and wait for a chance. No heroics, understand?'

'Sure, I understand,' Cord told her. He realized then that he was talking reassuringly, as if it wasn't the Planetary Regent but someone like Grayan.

'Nirmond's the worst,' Dane said. 'The girl was knocked unconscious at once. If it weren't for my arm – but, if we can get help in five hours or so, everything should be all right. Let me know if anything happens, Cord.'

'I will,' Cord said gently again. Then he sighted his gun carefully at a point between Dane's shoulderblades, and the anaesthetic chamber made its soft, spitting sound once more. Dane's taut body relaxed slowly, and that was all.

There was no point Cord could see in letting her stay awake; because they weren't going anywhere near shore. The reed beds and the channels were already behind them, and Grandpa hadn't changed direction by the fraction of a degree. He was moving out into the open bay – and he was picking up company!

So far, Cord could count seven big rafts within two miles of them; and on the three that were closest he could make out a sprouting of new green vines. All of them were travelling in a straight direction; and the common point they were all headed for appeared to be the roaring centre of the Yoger Straits, now some three miles away!

Behind the Straits, the cold Zlanti Deep – the rolling fogs, and the open sea! It might be seeding time for the rafts, but it looked as if they weren't going to distribute their seeds in the bay—

For a human being, Cord was a fine swimmer. He had a gun and he had a knife; in spite of what Dane had said, he might have stood a chance among the killers of the bay. But it would be a very small chance, at best. And it wasn't, he thought, as if there weren't still other possibilities. He was going to keep his head.

Except by accident, of course, nobody was going to come looking for them in time to do any good. If anyone did look, it would be around the Bay Farms. There were a number of rafts moored there; and it would be assumed they'd used one of them. Now and then something unexpected happened and somebody simply vanished – by the time it was figured out just what had happened on this occasion, it would be much too late.

Neither was anybody likely to notice within the next few hours that the rafts had started migrating out of the swamps through the Yoger Straits. There was a small weather station a little inland, on the north side of the Straits, which used a helicopter occasionally. It was about as improbable, Cord decided dismally, that they'd use it in the right spot just now as it would be for a jet transport to happen to come in low enough to spot them.

The fact that it was up to him, as the Regent had said, sank in a little more after that! Cord had never felt so lonely—

Simply because he was going to try it sooner or later, he carried out an experiment next that he knew wouldn't work. He opened the gun's anaesthetic chamber and counted out fifty pellets – rather hurriedly because he didn't particularly want to think of what he might be using them for eventually. There were around three hundred charges left in the chamber then; and in the next few minutes Cord carefully planted a third of them in Grandpa's head.

He stopped after that. A whale might have showed signs of somnolence under a lesser load. Grandpa paddled on undisturbed. Perhaps he had become a little numb in spots, but his cells weren't equipped to distribute the soporific effect of that type of drug.

There wasn't anything else Cord could think of doing before they reached the Straits. At the rate they were moving, he calculated that would happen in something less than an hour; and if they did pass through the Straits, he was going to risk a swim. He didn't think Dane would have disapproved, under the circumstances. If the raft simply carried them all out into the foggy vastness of the Zlanti Deep, there would be no practical chance of survival left at all.

Meanwhile, Grandpa was definitely picking up speed. And there were other changes going on – minor ones, but still a little awe-inspiring to Cord. The pimply-looking red buds that dotted the upper part of the cone were opening out gradually. From the centre of most of them protruded now something like a thin, wet, scarlet worm: a worm that twisted weakly, extended itself by an inch or so, rested and twisted again, and stretched up a little farther, groping into the air. The vertical black slits between the armour plates looked somehow deeper and wider than they had been even some minutes ago; a dark, thick liquid dripped slowly from several of them.

Under other circumstances Cord knew he would have been fascinated by these developments in Grandpa. As it was, they drew his suspicious attention only because he didn't know what they meant.

Then something quite horrible happened suddenly. Grayan started moaning loudly and terribly and twisted almost completely around. Afterwards, Cord knew it hadn't been a second before he stopped her struggles and the sounds together with another anaesthetic pellet; but the vines had tightened their grip on her first, not flexibly but like the digging, bony, green talons of some monstrous bird of prey. If Dane hadn't warned him—

White and sweating, Cord put his gun down slowly while the vines relaxed again. Grayan didn't seem to have suffered any additional harm; and she would certainly have been the first to point out that his murderous rage might have been as intelligently directed against a machine. But for some moments Cord continued to luxuriate furiously in the thought that, at any instant he chose, he could still turn the raft very quickly into a ripped and exploded mess of sinking vegetation.

Instead, and more sensibly, he gave both Dane and Nirmond another shot, to prevent a similar occurrence with them. The contents of two such pellets, he knew, would keep any human being torpid for at least four hours. Five shots—

Cord withdrew his mind hastily from the direction it was turning into; but it wouldn't stay withdrawn. The thought kept coming up again, until at last he had to recognize it:

Five shots would leave the three of them completely

unconscious, whatever else might happen to them, until they either died from other causes or were given a counteracting agent.

Shocked, he told himself he couldn't do it. It was exactly like killing them.

But then, quite steadily, he found himself raising the gun once more, to bring the total charge for each of the three Team people up to five. And if it was the first time in the last four years Cord had felt like crying, it also seemed to him that he had begun to understand what was meant by using your head – along with other things.

Barely thirty minutes later, he watched a raft as big as the one he rode go sliding into the foaming white waters of the Straits a few hundred yards ahead, and dart off abruptly at an angle, caught by one of the swirling currents. It pitched and spun, made some headway, and was swept aside again. And then it righted itself once more. Not like some blindly animated vegetable, Cord thought, but like a creature that struggled with intelligent purpose to maintain its chosen direction.

At least, they seemed practically unsinkable—

Knife in hand, he flattened himself against the platform as the Straits roared just ahead. When the platform jolted and tilted up beneath him, he rammed the knife all the way into it and hung on. Cold water rushed suddenly over him, and Grandpa shuddered like a labouring engine. In the middle of it all, Cord had the horrified notion that the raft might release its unconscious human prisoners in its struggle with the Straits. But he underestimated Grandpa in that. Grandpa also hung on.

Abruptly, it was over. They were riding a long swell, and there were three other rafts not far away. The Straits had swept them together, but they seemed to have no interest in one another's company. As Cord stood up shakily and began to strip off his clothes, they were visibly drawing apart again. The platform of one of them was half-submerged; it must have lost too much of the air that held it afloat and, like a small ship, it was foundering.

From this point, it was only a two-mile swim to the shore north of the Straits, and another mile inland from there to the

Straits Head Station. He didn't know about the current; but the distance didn't seem too much, and he couldn't bring himself to leave knife and gun behind. The bay creatures loved warmth and mud, they didn't venture beyond the Straits. But Zlanti Deep bred its own killers, though they weren't often observed so close to shore.

Things were beginning to look rather hopeful.

Thin, crying voices drifted overhead, like the voices of curious cats, as Cord knotted his clothes into a tight bundle, shoes inside. He looked up. There were four of them circling there: magnified sea-going swamp bugs, each carrying an unseen rider. Probably harmless scavengers – but the ten-foot wingspread was impressive. Uneasily, Cord remembered the venomously carnivorous rider he'd left lying beside the station.

One of them dipped lazily and came sliding down towards him. It soared overhead and came back, to hover about the raft's cone.

The bug rider that directed the mindless flier hadn't been interested in him at all! Grandpa was baiting it!

Cord stared in fascination. The top of the cone was alive now with a softly wriggling mass of the scarlet, wormlike extrusions that had started sprouting before the raft left the bay. Presumably, they looked enticingly edible to the bug rider.

The flier settled with an airy fluttering and touched the cone. Like a trap springing shut, the green vines flashed up and around it, crumpling the brittle wings, almost vanishing into the long, soft body—

Barely a second later, Grandpa made another catch, this one from the sea itself. Cord had a fleeting glimpse of something like a small, rubbery seal that flung itself out of the water upon the edge of the raft, with a suggestion of desperate haste – and was flipped on instantly against the cone where the vines clamped it down beside the flier's body.

It wasn't the enormous ease with which the unexpected kill was accomplished that left Cord standing there, completely shocked. It was the shattering of his hopes to swim to shore from here. Fifty yards away, the creature from which the rubbery

thing had been fleeing showed briefly on the surface, as it turned away from the raft; and that glance was all he needed. The ivory-white body and gaping jaws were similar enough to those of the sharks of Earth to indicate the pursuer's nature. The important difference was that wherever the White Hunters of the Zlanti Deep went, they went by the thousands.

Stunned by that incredible piece of bad luck, still clutching his bundled clothes, Cord stared towards shore. Knowing what to look for, he could spot the telltale roilings of the surface now – the long, ivory gleams that flashed through the swells and vanished again. Shoals of smaller things burst into the air in sprays of glittering desperation, and fell back.

He would have been snapped up like a drowning fly before he'd covered a twentieth of that distance!

But almost another full minute passed before the realization of the finality of his defeat really sank in.

Grandpa was beginning to eat!

Each of the dark slits down the sides of the cone was a mouth. So far only one of them was in operating condition, and the raft wasn't able to open that one very wide as yet. The first morsel had been fed into it, however: the bug rider the vines had plucked out of the flier's downy neck fur. It took Grandpa several minutes to work it out of sight, small as it was. But it was a start.

Cord didn't feel quite sane any more. He sat there, clutching his bundle of clothes and only vaguely aware of the fact that he was shivering steadily under the cold spray that touched him now and then, while he followed Grandpa's activities attentively. He decided it would be at least some hours before one of that black set of mouths grew flexible and vigorous enough to dispose of a human being. Under the circumstances, it couldn't make much difference to the other human beings here; but the moment Grandpa reached for the first of them would also be the moment he finally blew the raft to pieces. The White Hunters were cleaner eaters, at any rate; and that was about the extent to which he could still control what was going to happen.

Meanwhile, there was the very faint chance that the weather station's helicopter might spot them—

Meanwhile also, in a weary and horrified fascination, he kept debating the mystery of what could have produced such a nightmarish chance in the rafts. He could guess where they were going by now; there were scattered strings of them stretching back to the Straits or roughly parallel to their own course, and the direction was that of the plankton-swarming pool of the Zlanti Basin, a thousand miles to the north. Given time, even mobile lily pads like the rafts had been could make that trip for the benefit of their seedlings. But nothing in their structure explained the sudden change into alert and capable carnivores.

He watched the rubbery little sea-thing being hauled up to a mouth next. The vines broke its neck; and the mouth took it in up to the shoulders and then went on working patiently at what was still a trifle too large a bite. Meanwhile, there were more thin cat-cries overhead; and a few minutes later, two more sea-bugs were trapped almost simultaneously and added to the larder. Grandpa dropped the dead seal-thing and fed himself another bug rider. The second rider left its mount with a sudden hop, sank its teeth viciously into one of the vines that caught it again, and was promptly battered to death against the platform.

Cord felt a resurge of unreasoning hatred against Grandpa. Killing a bug was about equal to cutting a branch from a tree; they had almost no life-awareness. But the rider had aroused his partisanship because of its appearance of intelligent action – and it was in fact closer to the human scale in that feature than to the monstrous life form that had, mechanically, but quite successfully, trapped both it and the human beings. Then his thoughts had drifted again; and he found himself speculating vaguely on the curious symbiosis in which the nerve systems of two creatures as dissimilar as the bugs and their riders could be linked so closely that they functioned as one organism.

Suddenly an expression of vast and stunned surprise appeared on his face.

Why – now he *knew*!

Cord stood up hurriedly, shaking with excitement, the whole plan complete in his mind. And a dozen long vines snaked instantly in the direction of his sudden motion and groped for

him, taut and stretching. They couldn't reach him, but their savagely alert reaction froze Cord briefly where he was. The platform was shuddering under his feet, as if in irritation at his inaccessibility; but it couldn't be tilted up suddenly here to throw him within the grasp of the vines, as it could around the edges.

Still, it was a warning! Cord sidled gingerly around the cone till he had gained the position he wanted, which was on the forward half of the raft. And then he waited. Waited long minutes, quite motionless, until his heart stopped pounding and the irregular angry shivering of the surface of the raft-thing died away, and the last vine tendril had stopped its blind groping. It might help a lot if, for a second or two after he next started moving, Grandpa wasn't too aware of his exact whereabouts!

He looked back once to check how far they had gone by now beyond the Straits Head Station. It couldn't, he decided, be even an hour behind them. Which was close enough, by the most pessimistic count – if everything else worked out all right! He didn't try to think out in detail what that 'everything else' could include, because there were factors that simply couldn't be calculated in advance. And he had an uneasy feeling that speculating too vividly about them might make him almost incapable of carrying out his plan.

At last, moving carefully, Cord took the knife in his left hand but left the gun holstered. He raised the tightly knotted bundle of clothes slowly over his head, balanced in his right hand. With a long, smooth motion he tossed the bundle back across the cone, almost to the opposite edge of the platform.

It hit with a soggy thump. Almost immediately, the whole far edge of the raft buckled and flapped up to toss the strange object to the reaching vines.

Simultaneously, Cord was racing forward. For a moment, his attempt to divert Grandpa's attention seemed completely successful – then he was pitched to his knees as the platform came up.

He was within eight feet of the edge. As it slapped down again, he drew himself desperately forward.

An instant later, he was knifing down through cold, clear

water, just ahead of the raft, then twisting and coming up again.

The raft was passing over him. Clouds of tiny sea creatures scattered through its dark jungle of feeding roots. Cord jerked back from a broad, wavering streak of glassy greenness, which was a stinger, and felt a burning jolt on his side, which meant he'd been touched lightly by another. He bumped on blindly through the slimy black tangles of hair roots that covered the bottom of the raft; then green half-light passed over him, and he burst up into the central bubble under the cone.

Half-light and foul, hot air. Water slapped around him, dragging him away again – nothing to hang on to here! Then above him, to his right, moulded against the interior curve of the cone as if it had grown there from the start, the froglike, man-sized shape of the Yellowhead.

The raft rider—

Cord reached up and caught Grandpa's symbiotic partner and guide by a flabby hind-leg, pulled himself half out of the water and struck twice with the knife, fast, while the pale-green eyes were still opening.

He'd thought the Yellowhead might need a second or so to detach itself from its host, as the bug riders usually did, before it tried to defend itself. This one merely turned its head; the mouth slashed down and clamped on Cord's left arm above the elbow. His right hand sank the knife through one staring eye, and the Yellowhead jerked away, pulling the knife from his grasp.

Sliding down, he wrapped both hands around the slimy leg and hauled with all his weight. For a moment more, the Yellowhead hung on. Then the countless neural extensions that connected it now with the raft came free in a succession of sucking, tearing sounds; and Cord and the Yellowhead splashed into the water together.

Black tangle of roots again – and two more electric burns suddenly across his back and legs! Strangling, Cord let go. Below him, for a moment, a body was turning over and over with oddly human motions; then a solid wall of water thrust him up and aside, as something big and white struck the turning body and went on.

Cord broke the surface twelve feet behind the raft. And that would have been that, if Grandpa hadn't already been slowing down.

After two tries, he floundered back up on the platform and lay there gasping and coughing a while. There were no indications that his presence was resented now. A few lax vine-tips twitched uneasily, as if trying to remember previous functions, when he came limping up presently to make sure his three companions were still breathing; but Cord never noticed that.

They were still breathing; and he knew better than to waste time trying to help them himself. He took Grayan's heat-gun from its holster. Grandpa had come to a full stop.

Cord hadn't had time to become completely sane again, or he might have worried now whether Grandpa, violently sundered from his controlling partner, was still capable of motion on his own. Instead, he determined the approximate direction of the Straits Head Station, selected a corresponding spot on the platform and gave Grandpa a light tap of heat.

Nothing happened immediately. Cord sighed patiently and stepped up the heat a little.

Grandpa shuddered gently. Cord stood up.

Slowly and hesitatingly at first, then with steadfast – though now again brainless – purpose, Grandpa began paddling back towards the Straits Head Station.

MOTHER OF INVENTION

by *Tom Godwin*

The human mind is adaptable and can condition itself to acknowledge the existence of any circumstance, even such an unpleasant circumstance as the certainty of death.

The human mind is stubborn, and while it will acknowledge the existence of unpleasant circumstances, it refuses to accept such circumstances as unalterable.

The human mind can be very ingenious at altering unpleasant circumstances.

(From *Variations Among Our Galactic Cultures*, by the Antarean philosopher, B'Ral Gethan.)

IT WAS hot in the drive room of the *Star Scout* and Jim Brannon, Ship's Drive Technician, was sick. It had started as another siege of his chronic indigestion, somewhat aggravated by the lecture his wife had given him that morning on his mental, physical and financial insignificance, greatly increased by an ill-chosen meal at the Spaceport's cafeteria, and now rapidly becoming a serious attack of acute indigestion. Of all the factors, the heat was the worst. The drive room portholes were open and a blower fan mounted in one of them was forcing great volumes of air through the room, but the air was being scooped from no more than ten feet above the scorched surface of Spaceport I and it was hot and smothering with the humidity of tropical New Earth in midsummer.

He made a checkmark on the pad of ship's drive-inspection forms in his hand to show that the generator had been inspected and found to be in perfect operating condition, then returned the pad and pencil to his pocket before wiping the sweat off his forehead. The Bern nuclear converter was the last item in the drive room to be checked and he carried his box of tools and testing equipment over to it; a small, mousy man who usually moved with slow precision but hurrying now as he felt the first dizziness that was sometimes the forerunner of a faint spell.

The nuclear converter, which supplied both the fissionable fuel for the drive rockets and powered the ship's generator, was a fairly compact and self-contained unit of which only its fuel inlet required inspection. He extracted the special wrench from his tool box that unlatched the clamps on the fuel inlet's metal cover and undid them. A thorough and methodical man who believed a good workman could be told by the care he gave his tools, he laid the clamp wrench back in its form-fitting recess in his tool box, rather than on the gritty floor.

He dropped the flat hinged clamps down against the sides of the inlet box and lifted off the metal cover, then checked the

metering devices that regulated the intake of the reel of tungsten thread. He hurried, as the feeling of faintness increased, to check the delicate device that controlled the intake of catalytic carbon. This done, he returned all his tools and instruments to their proper recesses in his tool box and withdrew the inspection forms from his pocket to check the last spaces on them. He returned pad and pencil to his pocket and picked up the fuel inlet's metal cover, setting it in place on its soft gasket that would render it airtight when the clamps were secured.

The faintness increased as he reached out to lift up the clamps and he dropped back on his heels, trying to draw a deep breath and drive away the black dizziness. The dizziness increased and he had half-turned to shout for the other technician in the control room above when it swept over him in a black wave. He fell to the floor with his mouth wordlessly open.

A few minutes later the ship's elevator dropped to the drive room floor and the technician he had tried to call stepped out of it. 'Hey, Jim, did you—'

The technician gawked a moment at the still figure on the floor, then ran over to him. A quick inspection showed Jim to be still alive and the technician hurried back to the elevator, dropping it to the boarding ramp.

'Call the ambulance,' he yelled at a passing workman. 'Jim's fainted again.'

He waited until the ambulance arrived, then extracted Jim's pad of inspection forms from his pocket before they carried him away. The chief inspector appeared shortly afterward, his own master inspection form in his hand.

'Hello, Pete,' he said. 'I hear Jim fainted again.'

'This makes the third time that's happened,' Pete said, disgust in his voice. 'It's his own fault – his wife's always nagging him to make more money so he puts in all the overtime he can, and between the overwork, the nagging, the heat and the sort of food they have at lunch at the cafeteria – and him being a puny little guy, anyway – it's no wonder his stomach rebels now and then.'

'*My* stomach would rebel if I had the shrew he has for a wife,' the inspector said. 'Jim's a good sort – I like him, but that wife of his! Anyway' – the inspector mopped his florid and

steaming face – 'it's hot enough in this drive room to make *anybody* pass out.'

'I still say a man's a fool to let a woman nag him into indigestion and even acute indigestion and try to work overtime when he's not able to,' Pete, a bachelor, insisted.

'Well, maybe you're right,' the married chief inspector admitted, 'but he's the most reliable man I have. He's slow, but when he marks down a ship's drive as having been inspected, you can be sure that he missed nothing. Which brings up . . . what did he lack in here when he fainted?'

'Nothing,' Pete said. 'Here's his inspection form – he has every item checked off. He had already put all his tools back in his box, too, so he must have been done.'

The chief inspector took the inspection form and ran his eyes down it. 'He has everything checked, all right. So, let's get out of this oven. The old tub is now ready for flight so far as Port Inspection is concerned, and they want to take off the minute we clear them.'

'Where's it bound for?' Pete asked, pausing to light a cigarette.

'Out on the other side of the Thousand Suns cluster, somewhere. This is some little peanut outfit that call themselves Explorations Limited.'

'Oh?' Peter looked mildly interested. 'The other side of the Thousand Suns has some unmapped systems, I understand. What are they looking for – did they say?'

'I wouldn't know.' The chief inspector shrugged. 'I only talked to them a few minutes. There are five of them – an elderly sort of a fellow, who threw up his job as dean of some little technological college in New Chicago, gathered up his three brightest graduate students, and now they're all off into space to see the galaxy and seek their fortunes.'

'You said there were five,' Pete reminded him.

'There are. They bought this old heap – it was a service ship for the old Interplanetary Freightlines, once – and happened to run into a mining engineer just back from Charon. He had made a nice little pile in some iridium strike out there and he bought in with them. This had a rocket drive so the five of them managed to dig up enough money to have a hyperspace drive

and that nuclear converter installed. I guess it took every last cent they had, too – those hyperspace drives and converters really come high.'

'Well,' Pete observed, glancing at the converter, 'they sure wouldn't ever get anywhere with a rocket drive in normal space with the speed of light their maximum speed – not far enough away to mean anything in only one lifetime. It's pretty close to thirty thousand light-years to the Thousand Suns, isn't it?'

'Just about. Sixty thousand years for the round trip in normal space or a fraction over a year in hyperspace.'

'But what a year! I took one trip in hyperspace when I was a lot younger and more foolish than I am now. Only a forty-day jump, but I never saw forty days go by so slow in my life. You have to accelerate to get anywhere, even in hyperspace, and between the constant acceleration and the blackness outside your ship you feel like you weigh a ton and that you're stuck in a black tomb, not moving at all.'

The chief inspector grinned. 'Maybe you're subject to claustrophobia. And speaking of going somewhere – get Jim's tool box and let's get out of the Turkish bath.'

Pete picked up the tool box and followed his chief to the elevator, not noticing that flat, black clamps folded down against the flat, black sides of the fuel inlet box. It never occurred to him to give anything in the room a second glance; Jim Brannon was a methodical and thorough man and his inspection form showed that he had inspected everything in the room and found it to be in perfect condition.

The months passed for the *Star Scout* as she sped through the featureless blackness of hyperspace. At last the chronometers indicated that the time had come to commence deceleration and she made turn-over.

Down in her drive room the Bern nuclear converter squatted on the floor, microscopic sun in its heart emulating the suns they were approaching by its conversion of matter into energy. The unclamped cover of the fuel inlet jiggled uncertainly during the first weightlessness of turn-over, then lifted and floated to the ceiling as the drives made a corrective side-thrust. It remained there until the first thrust of deceleration came, then it was slammed to the floor with a loud clang.

The muffled thunder of the drives drowned the sound and none of the five men in the ship heard it.

The *Star Scout*'s normal-space speed was far below that of light when she dropped out of hyperspace beyond the rim of the Thousand Suns. Two last stars lay beneath her; a binary composed of a small yellow sun and a larger blue-white sun. Observations were taken and instruments noted the tiny, shining mote that swung four hundred million miles out from the blue-white sun. Other instruments determined the new destination and the *Star Scout* vanished again into hyperspace.

When she dropped once more into normal space the shining mote had become a planet that blazed like a great, radiant gem against the black void beyond. The planet grew as the hours went by, filling the viewscreen as Blake braked for the descent into its atmosphere. Land masses and small oceans were faintly discernible through the fiery, opalescent haze that blanketed the planet. The image swelled and enlarged, the surplus running off the four sides of the screen, until the western side of a continent and a small portion of ocean filled the screen.

The four men in the deceleration chairs behind Blake, and held as helplessly as he by the force, watched the image on the viewscreen and the multiple hands of the air analyser. The hands began to move as the first thin sample of air was scooped into the analyser, then settled into position a few minutes later.

'Breathable.' The grey-haired Taylor spoke with difficulty against the deceleration.

'Less carbon dioxide than New Earth,' Wilfred commented. Young, short and stocky, he was far less affected by the deceleration than the elderly ex-dean. 'I can't understand why the spectroscope showed such an incredibly high percentage of carbon. How could any planet's crust contain such an excess of carbon?'

'The carbon *must* be in the crust, rather than in the atmosphere,' Taylor said. 'Either that or the old spectroscope is erroneous. We know the air analyser is a new and reliable instrument, but these old Warden spectroscopes, like men, develop eccentricities with age. If we had a new—'

'Hang on,' Blake interrupted, his eyes on the instruments before him. 'I'm going to have to brake a little harder.'

The increased deceleration settled them all deeper in their chairs and no one spoke while the section of continent on the viewscreen became a hazy desert or plain through which ran dim wrinkles. The surplus slid away and the wrinkle in the centre of the screen became a range of mountains. Blake watched the translucent white dot in the centre of the screen that represented their point of landing and saw it would be along the eastern side of the mountain range. It would do as well as any other unknown section of the unknown, world and he let the ship hold its course.

The green line of a tree-bordered creek appeared, hugging the mountain's foothills, with the white dot between the creek and the mountain. The area covered by the dot became a small delta of alluvium from one of the canyons, with a few trees scattered across it. The delta swept up to meet them, slowing as it came, with the white dot in a flat clearing that seemed to be of some curiously glittering sand.

The *Star Scout* halted ten feet above the ground with a staccato of blasts from the drive tubes that sent the bright sand swirling in heavy clouds, then it dropped, cushioned by the drive, to touch the ground with a slight lurch. The wide tail fins settled in the sand and Blake cut off the drive.

'And here we are,' he remarked.

The others were already hurrying to read the data recorded on the instruments; Taylor and Wilfred, Lenson and Cooke. Blake watched them, interested by their reactions. None of them had ever been off New Earth before, let alone on a world hitherto unknown to exist, and they were as excited as children with a new toy. Taylor, steeped in the academic environment all his life, was the most enthusiastic of them all. He had once told Blake: 'With all due respect to ivied walls of stone, they can become a prison. I want to see a few things before I grow any older; deep space and distant suns and strange worlds—'

Lenson, a tall, lean man with the easy grace of a cat, stood a full head taller than the pink young Wilfred; a pleasant sort of a man with a slow smile and a tolerant understanding of the foibles of others.

There was the indefinable mark of the intellectual upon all three of them and among them the paradox, Cooke, stood out

like a black sheep among white. He was, Blake knew, fully as intelligent as any of the others; he, like the others, had been selected by Taylor because his intelligence and knowledge were considerably greater than the intelligence and knowledge of the average graduate. But he did not look the part. His dark, hard-jawed face was not that of an intellectual. Neither were his broken nose and glittering black eyes. Blake watched him, thinking: he doesn't belong with the others; he belongs on Old Earth three hundred years ago, on the deck of a pirate ship with a bloody cutlass in his hand.

But, for all his appearance of being a man of sanguine physical violence, Cooke seemed to be content to do no more than laugh at what his black eyes found in others and in life, itself.

'Earth-type in every important respect,' Taylor was saying. 'Gravity, temperature, air. No indications of any harmful bacteria – we've been incredibly fortunate.'

'We had about one chance out of several thousand of this being an Earth-type planet, didn't we, Red?' Lenson asked, looking over at Blake.

Blake nodded his red head. 'Quite a few thousand, since this isn't a class G sun. As Taylor said, we were incredibly lucky to hit the jackpot the very first try.'

'Then let's get out and look our find over,' Cooke said, shifting restlessly. 'Let's get out and romp across the sand and breathe some air we haven't breathed a million times already.'

Taylor looked questioningly at Blake and Blake nodded. 'I don't see any reason why we shouldn't,' he said. He checked the readings on the control board instruments from long habit and saw the red line that indicated the drive room's temperature. It was climbing rapidly, and he turned a knob marked: DRIVE ROOM – OUTSIDE VENTILATION. This would open the ports in the drive room and start the blower to rushing its great volumes of cool outside air through the overheated room.

'Drive room's mighty hot from the decelerating,' he said as he followed the others to the elevator. 'If we had had a little more money left over, we could have had full-size coolers installed.'

'We were lucky to scrape up enough money to buy what we have,' Wilfred said, dropping the elevator to the cabin level.

'Our worries are over, now,' Cooke declared. 'Anyone who

owns an Earth-type world isn't just rich – he's lord of all he surveys.'

They stopped at the cabin level only long enough to procure a sidearm each. 'You can't tell what you may run into on an alien planet,' Blake said, as he stepped back into the elevator. 'No signs of any intelligent, civilized life, but there might be animals. Sometimes animals don't wait for you to run into them – they take a deep breath and do their level best to run into *you* and tramp you into the ground.'

They dropped to the lower air lock and went through it. The boarding ramp was dropped to the ground and they descended into the cloud of dust that still swirled about the ship.

'The blower is filling the drive room with this dusty air,' Blake said, sneezing. 'I didn't realize it was so thick. But the drive room door is shut and none of this dust can get into the rest of the ship.'

They walked out away from the ship and the dust and stood in the glittering sand, looking about them curiously. The mouth of the canyon was visible above them, with the iridescent haze hiding the higher peaks. The trees were almost like those of the desert regions of New Earth, scattered very thinly across the mountain's foot, and viciously thorned bushes grew among them. Some of them, Blake noticed, were in bloom with exotically beautiful blossoms, ranging from delicate pink to vivid scarlet.

'Pretty,' Cooke commented. 'A little dangerous to try to pick one, I'd say; those thorns are Nature's ice picks.'

'We ought to name it . . . this world,' Taylor said. 'What shall we call it?'

'Aurora,' Lenson said instantly. 'She was the goddess of the dawn in ancient mythology. She was beautiful and she wore a veil. This world is beautiful and it wears a veil – that shining haze.'

'A good name,' Taylor agreed. He looked towards the creek a few hundred feet away, the creek itself hidden by the green trees that grew thickly along its banks. 'Let's get a sample of the water for analysis.'

They walked towards the creek, each of them unconsciously glancing back at the towering bulk of the ship as they went their

way. Men always did that, Blake had noticed, when they set down on an alien planet. They would go out from their ship with their eyes alertly watching for danger ahead, and they never failed to look back at the ship as though to reassure themselves that its ponderous mass was still there. It was a normal thing to do; when a man set down on an alien world he was on his own and his only link with other humans and other worlds was his ship. It had brought him there; it, alone, could take him back. A man walked out from his ship knowing that it would be waiting for him to return, like a great, patient dog; waiting and ready to hurl itself into space at his command. Sometimes an alien planet held death for the bipeds who ventured to explore it, such as the spider-monsters of Nelson 14, and the ship would be the sword of vengeance for those who lived to fight their way back to it. The ship would avenge the fallen with fury in the thunder of its voice and annihilation in its flaming breath, leaving only drifting ashes where once had been alien things that had made the mistake of killing a human.

Without their ship, men on a hostile, alien world would be near-helpless; with their ship, they were invincible conquerors.

'Flowers, even,' Cooke exclaimed as they neared the trees by the creek. 'Red, blue, yellow, purple; green trees and good air – what more could we offer colonists?'

Blake had been examining the shining sand with increasing curiosity, and he stopped to inspect a bright crystal half the size of his hand. It was not quartz. He scratched at it with his knife point but could not make any impression. The same would have been true of quartz, but the crystal did not have the appearance of quartz. It was alive with internal fires and the crystal system, such as he could tell from its rounded, worn form, was distinctly not that of quartz. A little way farther on he found one that glowed a deep ruby red. He paused to pick it up, then hurried on at an excited exclamation from Lenson, who had gone with the others to the edge of the creek. '*Look at this!*'

'This' was a crystal at the very edge of the creek's roiling, opalescent waters, the same deep ruby red as the one he had in his hand but a foot in diameter. Near it were other, smaller,

crystals of blue-white, yellow, red, blue, green, with the blue-white ones predominating. The sand, gravel and rocks of the creek bed seemed to be composed exclusively of the bright mineral.

'Did you ever see so many quartz crystals in your life?' Lenson was asking the others. 'Or so many different colours? Look at this one – it looks like a ruby.'

Blake failed to hear the reply of the others, a thought he had had upon first examining the bright sand suddenly losing the fantastic quality which had caused him to dismiss it. It all checked, the lack of any mineral other than the one in the creek bed, the 'erroneous' spectroscope that had shown the world to possess an impossible percentage of carbon, the high index of refraction possessed by the mineral.

He could find out very quickly.

'Let me have your diamond ring,' he said to Wilfred.

Wilfred pulled it off his finger and handed it to him with a look of questioning surprise. Blake scratched the diamond in the ring across the red crystal he still held in his hand. It left no impression and he repeated the performance on several other crystals scattered on the ground near him. On none of them could he produce the faintest scratch with the diamond in Wilfred's ring, no matter how heavily he bore down.

'The spectroscope was right,' he said, wondering if the others would find it as hard to believe as he did. 'I don't see how it could be, but it *is*.'

'Is what?' Wilfred asked.

'Carbon – all these crystals are *diamonds*!'

They stared at him, incredulous. 'They couldn't be!' Wilfred objected. Lenson asked, 'How can you tell for certain? Are you sure?'

'The diamond in this ring won't scratch them,' he replied. 'The only mineral a diamond can't scratch is another diamond.'

'Then they really are diamonds?' Taylor said, dropping to his knees to pick up a deep, bright-blue one that lay beside the ruby-red stone that Lenson had found. 'But the variations in colour – are they *all* diamonds?'

'All those that are any size,' Blake told him. 'The softer silica would soon be reduced to a powder by the grinding action

of the diamonds in the creek bed. Anything of any appreciable size that shines is pretty certain to be a diamond.'

'Hm-m-m!' Cooke grunted, and shook his head in amazement. 'I'm delighted to hear it, but it's still hard to believe. Talk about luck – here we sink our last cent to make this one trip, with the odds all in favour of our finding nothing, and the first thing we do is hit a double jackpot; not only an Earth-type—almost—planet but also an unlimited fortune in diamonds. Such luck is incredible.'

'It *is* incredible,' Blake agreed. 'It just isn't the sort of thing that—'

His voice was drowned by a thunderous bellow from the ship. He whirled towards it, as did the others, wild disbelief on the faces of all of them. The same thought flashed in their minds in the same instant; *they were all five there – there was no one in the ship!*

The ship shot into view, leaping high enough in the air that they could see it above the trees that surrounded them. A gout of blue-white flame was lashing from a hole torn in its stern, then the flame vanished and the ship poised motionlessly for a moment; a great, metal monster halted in mid-flight and pinned against the background of haze sky. Then the nose dropped, the tail went up, and it fell. It fell in a horizontal position, its impact hidden from them by the trees but the sound of it loud and terrible to hear; the muffled scream of rending metal shrill above the ground-jarring thud of the impact.

Blake ran past the others, towards the ship. He was vaguely aware of someone yelling, '*What*—' then he broke through the concealing trees and stopped, appalled by the sight that met his eyes.

Spaceships were made to withstand the pull of gravity when at rest on their tail fins; to withstand the thrust of the drive which, whether accelerating or decelerating, was only the equivalent of gravitic attraction from the stern. They were constructed to possess great longitudinal strength, with no great cross-sectional strength needed. They were not constructed to withstand a horizontal drop.

The *Star Scout* was broken in two.

Taylor stopped beside him, white and shaken.

'What . . . what was it?' someone asked. 'What happened . . . how *could* it happen?'

'The converter blew up,' Blake said, his lips feeling oddly stiff and numb. 'It was my fault – I should have had brains enough to think about it before it was too late.'

'What do you mean?' Cooke demanded.

'I left the blower going, driving cool air into the drive room. The air was loaded with the dust we stirred up when we landed, and that dust was mainly diamond dust.'

'Oh!' Cooke's eyes were fixed on Blake. 'So that was it. Diamond dust – carbon – *catalyst*!'

'But how?' Taylor asked. 'How could the diamond dust have gotten into the converter?'

'I don't know.' Blake shook his head. 'Maybe the inspection crew forgot to put the cover back on the fuel inlet – maybe the clamps broke while we were en route. Anyway, it happened – somehow enough of the dust got into the fuel inlet to put the amount of catalyst past a critical percentage and the converter exploded. I shouldn't have started the blower until I first went in and made a check of the fuel inlet.'

'Why?' Cooke asked. 'Did you ever hear of anything like this ever happening before?'

'No.'

'Could it have happened in the dust of New Earth – or the dust of any planet you were ever on?'

'No.'

'Then why should you have checked? You had no reason to think the fuel inlet might be open, and neither did you discover this was diamond dust until about a minute before the explosion. You couldn't have done anything about it in only one minute.'

'I suppose not,' Blake agreed, 'but I can't help feeling I should have been more careful. But that's all water under the bridge; here we are among our diamonds with no way of getting home – not for a long time at best, I'm afraid. So let's see just how long that may be, just how great the damage to the ship is.'

'From here,' Cooke observed as they walked towards the

ship, 'the situation looks hopeless. Our ship looks exactly like an over-ripe watermelon that's had a bad fall. It's not only broken in two, with a few girders holding the broken halves together, it's also sort of flattened now, rather than round like it once was.'

'And gaping open at every seam,' Wilfred added.

They passed the stern of the ship, where the rim of the ragged hole still glowed redly with half-molten metal, and Blake motioned towards the deep furrow blasted in the ground where the ship had stood. 'The blast was directional,' he said. 'If it hadn't been, it would have destroyed the lower half of the ship.'

'It didn't make such a big hole in the stern,' Cooke remarked with a return of his characteristic optimism. 'We could patch it.'

'Of course,' he added bleakly, 'we'd only have half a ship to drive, and no converter to power our drive – if we have a drive left.'

They entered the ship by the gap where it had broken apart, climbing through the bent and broken steel. The elevator shaft, now a horizontal passageway, was accessible by climbing up the ragged, torn sheet metal and girders. Blake made a suggestion to the older Taylor before they climbed up into the elevator shaft.

'I'd like to look at the drive room and the repair shop. So, suppose Cooke and I do that while you and the others see what the damage is in the forward half of the ship?'

'Anything you say, Red,' Taylor answered. 'I have an idea we'll find nothing but wreckage either way.'

'First, I'll get some lights for you,' Blake said.

He climbed up into the elevator shaft and made his way to the supply level of the ship. The door to the room he entered opened with considerable difficulty and the scene inside, as revealed by his pocket lighter, was utter confusion and chaos. He found the locker that held the emergency lights under a mass of miscellaneous supplies, equipment and broken containers, and took five lights from it.

He went back to the gap in the ship and tossed three of the lights to the others. They began to climb up into their own

section of the ship and Cooke scrambled up to where he stood.

'How did it look where you were?' Cooke asked.

'Just a little untidy,' he answered, leading the way to the drive room.

They forced the now-horizontal drive room door open, and a gush of warm air struck them. The drive room was fairly well lighted by the hole the converter's explosion had produced, and they appraised the damage, not caring to drop the ten feet to the new floor.

'That shapeless gob over there by the hole – that's all that remains of our converter,' Blake said. 'The explosion was directional, all right, and the converter was working at minimum output – if it had been up to as much as quarter output the entire ship would have vanished in a blaze of glory.'

He flashed his light down into the shadowy corners of the room and found what he sought. 'Look – see that square metal thing?' he asked. 'That's the fuel inlet cover. Sure enough it wasn't in place – they must have forgotten to tighten down the clamps.'

'And we *paid* them to do that?' Cooke asked bitterly, flashing his own light over the cover.

Blake moved his light slowly over the drive assembly. Originally equipped with the old Harding atomic drive, the transformation to the hyperspace drive had – for financial reasons – been confined to the installation of the space-shift units and the installation of the nuclear converter to supply the enormous energy required by the hyperspace units to wrench the ship from normal space into hyperspace. Although a modern drive would have been preferred, their limited capital had forced them to compromise by leaving the atomic rocket drive intact, and modifying its fuel chambers to accept the tailor-made fuel prepared for it by the converter.

'How does it look?' Cooke asked. '*I* can't see where the blast did any damage to it. Am I right?'

'I think you are – the directional blast missed it and its construction was rugged enough that the fall didn't affect it. This is more than I had dared hope for – we can alter those fuel chambers back to the way they were and we have a rocket drive again.

'If,' he added, 'we can find uranium.

'And then what? Won't we be a little bit old and feeble by the time we get home through normal space, thirty thousand years from now?'

'Well, I don't know of any outpost of civilization we can reach in less than two hundred years,' Blake said, 'which would be too far to do us any good. However, to get anywhere in hyper-space, we still have to have a drive, you know. We have to have a drive to get off this planet so we can get in hyperspace in the first place.'

'Once we fix up our drive and get away from here – how do we get into hyperspace with no converter to power the space-shift units?' Cooke asked.

'That is *the* question, and I don't know the answer. But I was taking first things first. If we can find uranium – and we surely can – we can soon solve every problem but that one.'

He passed his light over the squat generator that had served to supply the ship with electrical power before the installation of the converter. It hung by two of its mounting bolts from the vertical floor, but it seemed undamaged.

'There's our power – if we had some way to store it,' he said. 'If we could devise a perfect condenser of unlimited capacity, we could accumulate enough power to give the space-shift units the wallop that would jump us into hyperspace. Anyway, whatever we do, we're going to need that generator. We're going to need electrical power for operating the lathe – if it isn't smashed beyond repair – welding, perhaps even for refining metals with some sort of an electric furnace.'

'How do we power the generator?' Cooke asked.

'That can be done,' Blake said. 'Provided we have a lathe to build what we want.'

He turned away from the drive room without further explanation, and Cooke followed him to the repair shop. As with all other rooms in the ship's new position, the door was horizontal, but the repair shop was smaller than the drive room and it was no more than a six-foot drop to the new floor. Blake saw, with a sense of vast relief, that the lathe was still solidly bolted to the vertical floor. The other equipment was a jumbled

mass on the floor and they poked into it curiously for a few minutes.

'Not much in the way of broken stuff here,' Cooke said. 'Steel tools seem to stand up pretty good when a ship does a belly-whopper. I hope the transmitter fared as well.'

'That's something we're all hoping, but you're the first one to speak out loud about it,' Blake said. 'I don't see how it could have survived – a transmitter is big, heavy, and fragile.'

'Neither do I. I suppose that's why no one dared even say he hoped it wouldn't be smashed.'

'Let's see about our truck,' Blake said. 'If the transmitter is smashed beyond repair, we'll have to try to find uranium and we'll stand little chance of prospecting these ranges on foot.'

Again, luck had been with them. The little truck was unharmed but for a crumpled fender. Some of its bright red enamel had been knocked off by the fall of the diamond drill rods but the diamond drill, itself, seemed untouched.

'And that covers the important things in our end of the ship,' Blake said. 'Let's see what luck the others had.'

Wilfred was just descending from the broken elevator shaft, carrying a load of food and cooking utensils. 'We'll camp out for a while, it looks like,' he said. 'With the new floors knee deep in wreckage and the doors six feet to ten feet up on the walls, living in the ship would be just a little inconvenient.'

'We'll have to cut a passageway along the bottom side of the ship's hull,' Blake said. 'We can dodge the girders and just cut through the old flooring.'

'How did it look up there?' Cooke asked. 'What about the transmitter?'

'We won't send any SOS,' Wilfred said flatly. 'The transmitter tubes are smashed to fragments.'

'I was afraid they would be,' Blake said. 'Do the others need help with their loads?'

'They could use some help, all right,' Wilfred said, climbing down with his own.

They crossed the gap and met Lenson and Taylor in the elevator shaft, each with a burden of sleeping bags and various other things needed for a comfortable night outside. Blake and

Cooke relieved them of part of their loads and the four of them carried their burdens to the clean, sandy spot near one of the trees where Wilfred had set up their 'kitchen.'

Blake dropped his load and spoke to Taylor. 'So the transmitter is ruined?' he asked.

'The final power stage is,' Taylor replied. 'The driver stage took the fall pretty well and we could couple that in *except*—'

'Except what?'

'In normal space that would give us a range of around a billion miles – no more than halfway to our sun's yellow companion. Useless.'

'Oh – so we don't even get the chance to use our little driver stage in hyperspace?'

'The space-shift signal transformers are complete wreckage. Any signal we sent, even if we had our final power stage intact, would take three lifetimes to reach the nearest outpost through normal space. We could send a signal through hyperspace, with our driver stage, for sixty thousand billion miles – but the hyperspace transformers are broken and smashed and we could never, with our resources, replace them. So that brings up the question – what now?'

'Our space-shift units in the drive room seem to be undamaged and it wouldn't be difficult to change the rocket fuel chambers again so that we can lift the ship with a uranium fuel,' Blake answered. 'And we do have to lift the ship to make the jump into hyperspace under any circumstances. If uranium is to be found, we'll only have the one big problem to solve – and it's really big – how to produce enough power to activate the space-shift units. If necessity forced us to, I have an idea we might even make another converter. Of course, our success would be an uncertain thing and it would require years of work as well as luck, but it would be better than just giving up – at least, we would be trying.'

He glanced towards the near-by canyon mouth. 'Uranium is the vital essential, no matter what we do. I'm going to take a little walk while Wilfred fixes something to eat – I want to see what the formations look like, and if they offer any encouragement.'

'And then we'll talk over our plans after we eat,' Taylor said.

'A man takes a more optimistic view of his circumstances when his stomach is full, anyway.'

Blake walked until he came to the first bank of rock and gravel, then examined what he found with considerable muttering. The formations represented by the rocks that had washed down out of the canyon were almost like those of any Earth-type planet, with one incredible exception; every rock, whether near-granite, near-rhyolite, near-andesite, whether high or low in silica content, contained almost the same high percentage of diamond crystal inclusions. In the coarse-grained rocks, such as the near-granites, the diamond crystals were as large as the end of his little finger, while the fine-grained near-rhyolites contained the diamonds as minute inclusions. But, whether the rock was fine- or coarse-grained, the diamond was present in all in approximately the same high percentage.

He had just come upon his first specimen of Aurora's animal life when he heard the distant call of Wilfred announcing dinner. He ignored the call for the moment, walking closer to the small, brown-furred animal. It was about the size of a squirrel, with a round, dark-eyed face and a fat little stomach that it scratched in an absent manner as it solemnly watched his approach. It let him reach within six inches of it before it scampered a few feet farther away from him, to stop and resume its solemn staring.

Wilfred called again and he turned back towards camp, the little animal staring after him as he went. Apparently they would have no ferocious carnivora to contend with on Aurora – the little animal had been without fear of him, or virtually so. It had not behaved in the manner of an animal accustomed to the law of 'Run – or be eaten!'

Dishes were scrubbed with a generous amount of sand and a small amount of water after the meal was over, then Taylor began the discussion of their circumstances.

'Our simplest solution would have been to send out an SOS,' he said. 'We could have contacted a ship easily enough on the emergency band – possibly one no more than a day or so from here.'

'A day or so by hyperspace – two hundred years or more in normal space,' Cooke commented. 'A man doesn't really

realize how great galactic distances are until he gets stuck thirty thousand light-years from home, does he?'

Lenson sighed and gave the broken ship a dark look. 'I'm already beginning to acquire an unpleasant comprehension of the true magnitude of galactic distances.'

'It seems to me that we have only two alternatives,' Blake said. 'We have to get either our ship or an SOS into hyperspace. We have the power to send the SOS through hyperspace, but the space-shift transformer that would send our signal into hyperspace is broken. The space-shift units that would send our ship into hyperspace are undamaged – but we haven't the power they would have to have. Which do we want to try to do – build a nuclear converter and take our ship back, or make a space-shift transformer for the transmission of an SOS?'

'We would not only have to make the transformer that would send our signals into hyperspace, we'd also have to replace the broken power stage of the transmitter,' Taylor said. 'The driver stage, even in hyperspace, would have a range so limited that it wouldn't reach the nearest outpost. Unless a ship happened to wander within its range, its signals would never be picked up. And space being the size it is, that might not occur within our lifetimes.'

'You think it would be useless to attempt to duplicate the space-shift signal transformer and the transmitter tubes?' Wilfred asked.

'I'm convinced that their duplication is beyond us,' Taylor said. 'They require special alloys as well as rare gases. They require delicate precision assembly; in fact, the machines that assemble them would require years of labour to build.'

'We already have the means of putting our ship into hyperspace,' Blake said. 'All we need is the power. It seems to me we could more easily figure out a method of accumulating that power than we could build precision electronic equipment. After all, all we need is a tremendous store of energy to power our jump into hyperspace – a lot of energy for a short period. The drop back into normal space doesn't require but a fraction of that power.'

'If there is no hope of sending an SOS, then we haven't any choice but to do that, have we?' Wilfred asked.

'I think we can safely say that the hope of sending an SOS is nil,' Taylor said.

None of the others voiced any disagreement and Blake said:

'If we can find uranium, we won't have much trouble changing the fuel chambers to suit the fuel. We probably will have to spend more time making the ship – or the stern half of it – airtight again than anything else. At any rate, the whole thing is hopeless unless we do rig up an atomic drive. We have to lift our ship into space to slip it into hyperspace and there's no use conjecturing on how we're going to take the second step until we know we can take the first step.'

No one spoke for a few seconds, then Taylor said, 'I suppose we agree on that, then. Now, the important thing is; can we find the uranium?' He looked at Blake. 'How about it – what do you think of the possibilities?'

'I couldn't say,' Blake answered. 'I haven't seen any of this country, yet. I saw no evidence of metallic ores in the rocks washed down out of that canyon, but we could hardly expect to discover uranium that easily.'

'What *did* you find?' Cooke asked.

'These rock formations are similar to Earth-type formations, and the silica content is about normal – if a person discounts the diamond present. The diamond is present in all formations, whether high or low in silica, usually as small to minute crystals. The large crystals we saw must have come from pegmatitic formations.'

'Which are—?' Cooke asked.

'Extremely coarse-grained bodies of rock. Minerals in pegmatitic form as unusually large crystals. On Charon we found a perfect quartz crystal that weighed a thousand pounds in a pegmatitic formation. Cummings – an old white-haired fellow who had been born on Old Earth – said that crystals much larger than that had been found on Old Earth in the past.

'There's something else about pegmatites,' he added. 'Pitchblende is sometimes found in pegmatitic formations. So, it may possibly be that the uranium ore we find – if we find any – will be in the same formation that these diamond boulders come from.'

'Another thing—' Taylor said, thoughtfully. 'We'll have to

have cadmium. Cadmium and uranium – if we can find the two ores and refine them, we can alter the drive.'

'Which will take how long – just as a wild guess?' Lenson asked.

Taylor smiled. 'That's like asking how high is up. But, just as an optimistic guess, I'd say from one to two years.'

Wilfred nodded his head in agreement. 'I'd say that was about right – not less than one and not more than two years. We're lucky in that we have a lathe and other tools to work with, a truck to use for prospecting, and all the mining equipment we need to mine the ore after we find it.'

'The first thing will be to fix up a place to live,' Taylor said, pulling up his pants leg to rub a skinned and bruised knee. 'Climbing in and out of those rooms as we did this afternoon is hard work, and painful.'

'Red suggested cutting a passageway along the bottom of the hull – using the bottom of the hull as the floor,' Wilfred said. 'That shouldn't take long. We can rearrange everything to accommodate the new floor and we'll certainly have to take the lathe down off the wall and set it up again on the floor.'

Their first Aurorian sunset stopped all talk of future operations a few minutes later. The sun was invisible behind some distant range, its last rays throwing lances of ruby, emerald and gold across the scintillating rainbow field that was the western sky. The lances shifted as they watched, widening and quivering with the splendour of their ever-changing colours until they rippled across the sky like the banners of some celestial fairyland.

Lenson was the first to speak, after the colours began to fade. 'I never saw anything like that,' he said, almost awe in his voice.

'Nor I,' Cooke said, sprawling back against his sleeping bag. 'That looks exactly the way my mother used to tell me heaven would look – before she decided I'd never go there, anyway.'

'Probably caused by several different layers of air currents, travelling at different speeds and carrying varying amounts of dust and water vapour,' Wilfred offered.

'Huh!' Cooke snorted. 'Do you always have to be so pragmatic and practical?'

'Oh, it was impressive, I'll admit, but there was a simple, everyday reason for its beauty – the one I suggested, likely. Beautiful sunsets on Earth-type planets are due to water vapour and impurities in the atmosphere.'

'Then, so long as we're stuck here, let's be grateful that our atmosphere does contain these beautiful-sunset producing impurities,' Lenson said.

Blake, his mind busy with thoughts of the many things they had to do in the weeks to come, only half heard Lenson's statement but he would recall it often in the years ahead of them and find a certain amusement in conjecturing upon how bitterly mocking it must be ringing in Lenson's mind.

The afterglow faded from the sky and the Thousand Suns revealed themselves; a field of bright points of light shining through the haze with sufficient brilliance to throw dim shadows along the ground.

'We'll have to make observations,' Taylor remarked. 'I'll start making daily observations of our sun and its companion. We know the days here are about twenty-four hours long, but we don't know whether its spring or summer – or possibly this world has no seasonal inclination of the poles.'

'I think it's spring,' Blake said. 'The higher peaks we saw through the haze were covered with snow. Of course, that's not very conclusive evidence.'

'Let's hope it's spring,' Taylor said. 'We know that our year is about six Earth-years in length and, with luck, we may be able to get away from here before winter comes.'

There was a little more talk of their plans; then, one by one, they spread out their sleeping bags and crawled in. Blake, the last to retire, sat for a while watching the golden field the Thousand Suns made of the haze, reaching from the western horizon halfway to the zenith. To the east the sky was dead black, with no star to relieve it. There were none in that direction; not for a long, long way. Aurora had recently passed the farthest point from the Thousand Suns in her orbit; a straight line would pass from her to her sun, close by the blue-white sun's yellow companion, then on into the Thousand Suns.

Blake remarked, just before he went to sleep. 'You'll see what

utter darkness is before morning – after the Thousand Suns go down and before the sun comes up.'

It required fifteen days to get the ship even partly in condition for living. There was the passage to be cut, doors to be fitted to keep out the fine dust stirred up by the afternoon winds, the ship's water tank to be equipped with sediment filters, the tables and chairs to be unbolted from their incongruous positions on what had become the walls, the truck to be lowered out of the ship – an endless number of things to be done.

Blake and Cooke left on the morning of the sixteenth day, leaving the other three to continue the work on and in the ship. They watched Blake and Cooke depart with a certain wistfulness and Cooke remarked, as they ground away through the sand, 'I think all would have liked to go with us. They'll have nothing but hard work while we're out enjoying the fresh air and new scenery.'

'You may change your mind about "enjoying" it,' Blake said. 'Walking can be hard work when you do it all day.'

'What's this truck for?' Cooke wanted to know.

'To haul our stuff. We won't use it any more than we have to – we can make new shoes by hand but we can't make a new truck.'

'Do you think the diamond dust will be that bad?'

'I hope we find diamond dust and sand are the exceptions rather than the rule, but all evidence shows the diamond to be present everywhere. If so, we'll have to use the truck as little as possible – if we find the ores we want, then the truck will be indispensable for hauling them to the ship. Whatever we have to have for refining the ores will have to be at the ship – or we'll have to haul a good deal of material and equipment to the ore. Either way, we'll have to have this truck, so we'd better take care of it.'

'I can see your point,' Cooke agreed, 'but I doubt that we'll wear it out very fast. After all, this thing was made to use in country where there was silica sand, and diamond is less than fifty per cent harder than silica.'

'If you were correct in that surmise, I wouldn't be worried,' Blake said.

'What do you mean – "if"?' Cooke demanded. 'Quartz has a hardness of seven and diamond has a hardness of ten. That's less than fifty per cent harder, isn't it?'

Blake sighed. 'The true and unpleasant facts are these: diamond is said to have a hardness of ten because it's the only thing harder than corundum's nine. A mineralogist named Woodell, a long time ago and back on Old Earth, determined the true hardness of diamond in comparison with quartz's seven and corundum's nine. The actual hardness of diamond ranges from a fraction over thirty-six to a fraction over forty-two.'

'Oh.' Cooke was thoughtfully silent for a while. 'Then we can count on this diamond sand and dust being six times harder than the sand and dust this truck was made to resist.'

'Six times harder, and also tougher.'

They lurched across a small gulch and on to a silty flat, winding to avoid the thorn bushes that were scattered across it. The morning air was still and the dust they raised followed them in a dense cloud, coating their faces and clothing an iridescent grey, gritting harshly wherever two parts of metal moved together, such as the driving controls. They had travelled an hour, enclosed in the cloud of destructive dust, when Blake said, 'I wonder—'

'You wonder what?' Cooke asked, his black eyes made blacker by the grey dust that covered his face.

'I wonder if this diamond dust hasn't got us behind an eight-ball – a big, shiny eight-ball named Aurora.'

They worked their way along the southern foot of the mountain, towards the high plateau to the east where the creek might have its headwaters. They prospected the canyons one by one, both by carrying back samples of the bedrock gravels to the truck, to pan for particles of the heavy uranium and cadmium ores they sought, and by use of the Geiger counters they each carried. Cooke ran the gauntlet from his first feeling of carefree adventure to a condition of sore, aching legs and blistered hands. Their picks and shovels wore away with amazing rapidity, even from digging in the comparatively loose gravels of the canyon beds, and they found nothing.

They reached the eastern end of the range; a high, bleak

plateau where the creek had its headwaters and where the nights were chilly with the breezes from the slowly melting snowbanks. There was nothing there but barren flow rocks and the inevitable diamond, so they turned and worked their way back down the northern side of the range. Cooke's soft muscles hardened and his habitual optimism returned, undaunted by the lack of heavy-metal concentrates in the samples they panned or by the Geiger counters that remained silent but for the intermittent clicking of the natural background count.

Twice they found veins of soft iron oxide and once they found a narrow vein of low-grade copper ore but the mountain seemed devoid of any uranium or of any lead-zinc ore that might contain the cadmium they needed.

Blake cared for the little truck with painstaking attention, doing everything possible to keep the diamond dust out of its moving parts. But no way could be devised to keep the dust out of such moving parts as the brake drums, the ball and socket of the front-wheel drive, the control-lever linkage, the winch they were forced to use so many times, and many other moving parts. The air filter caused him more worry than anything else. He knew a certain amount of the fine dust was getting past the filter and into the motor, and there was nothing he could do about it. It was a good filter, made to protect an engine against silica dust; any silica dust fine enough to get past the filter would be too fine to cause any damage before it was reduced to an impalpable powder. But the diamond dust it admitted was six times harder than silica, as well as tougher – the diamond dust would refuse to be reduced to a harmless, impalpable powder.

They rounded the west end of the range early on the thirtieth day and saw the green line of the creek a mile away. The truck laboured noisily as Blake turned it up a gentle grade towards the mouth of a narrow canyon and he shifted into a lower gear.

'It's a good thing we're only five miles from camp,' Cooke said. 'You're about three gears lower than you would be if this truck was in the same condition it was in when we left camp thirty days ago.'

'I'm afraid this will be its last trip – I've tried to baby it

along and keep the dust out of it, but you just can't enclose a machine in a dust-proof wrapper.'

They left the truck on the smooth alluvial fan just outside the canyon's narrow portal and began the by now repetitious process of prospecting the canyon. It was late in the afternoon when they found their first cadmium; a thin grey seam of metallic sulphide in a rock washed down from higher on the canyon's wall.

'The grey sulphide is lead and zinc,' Blake said. 'Those little yellowish-orange spots in it are cadmium sulphide.'

Cooke shook his head. 'The percentage of cadmium is so slight – and the lead and zinc is only a thin seam.'

'It might have wider portions where it's in place,' Blake said, looking up the steeply sloping canyon's side. 'It shouldn't be hard to find.'

They located it in place an hour later, halfway up the canyon's side, but it was only a short, narrow seam. Blake tried unsuccessfully to dig into it with his prospector's pick, the point of which had long since been worn to a blunt stub. Cooke, pounding vainly at the tight-grained formation beside him, stopped to light a cigarette and wipe the sweat from his face.

'We have acids and glycerine,' he said. 'If we only had a few holes drilled in this rock, we could fill them with nitroglycerine.'

'There's a chance in a thousand that it might get wider at a greater depth,' Blake said, ceasing his own futile pounding. 'But how do we drill holes in it?'

'The diamond drill—' Cooke began, then his voice trailed off.

'Exactly,' Blake said, seeing what was suddenly in Cooke's mind. 'How do we drill diamond-bearing rock with a diamond drill?'

'How did we intend to drill holes for mining when we started out thirty days ago? I won't argue about the diamond drill – I can't see how it could drill through diamond-bearing rock – but why didn't we think of all that before?'

'We didn't know for sure that all formations carried the same high percentage of diamond,' Blake pointed out. 'We hoped such wouldn't be the case, remember?'

'What a world to live on!' Cooke sighed. 'Everything we try to do is foiled by diamonds. How can a superabundance of just one element manage to cause so much grief?'

'Well' – Blake shook his empty canteen and glanced to the west where the sun had disappeared behind the canyon wall – 'we can't do any more here, now, so we might as well get on back to the truck and have something to eat before dark.'

Cooke led the way to the bed of the canyon, his blithe spirits returned sufficiently for him to be whistling by the time they reached it. They were halfway to the canyon's portal when it became suddenly darker, as though a heavy cloud had covered the sun. It grew darker, although Blake's watch said the sun was not quite ready to set, and when they were almost to the portal's cliffs, where the canyon suddenly opened out upon the desert, he became aware of a low roar above the crunching of his footsteps in the diamond sand. It came from the desert beyond the portal; a sound like a distant waterfall.

Cooke, two hundred feet ahead of him, was still whistling cheerily and had obviously not heard it. Blake increased his pace and was almost up with him when Cooke stepped beyond the cliffs that still hid the desert from Blake.

Cooke stopped, then, a look of amazement on his face, staring in the direction of their truck and the desert beyond. Then he wheeled to shout back at Blake, '*What is it?*'

Blake was beside him a few seconds later and he saw the source of the sound he had heard.

It was a mile away; a great, high black wall rushing towards them, its towering crest lost in the atmospheric haze. It was racing towards them at perhaps fifty miles an hour, roaring with a deep, sustained roar and the sheer front of it seething and boiling.

'What—?' Cooke began, but Blake cut him off with a terse, 'Come on!' He ran towards the truck, estimating the distance they must cover before the black wall reached them. The truck was not far – but the wall was travelling at least fifty miles an hour.

'Is it—' Cooke began again, then gave up as a gust of wind whipped sand in his mouth, and devoted his full attention to keeping up with the fleet Blake.

They reached the truck with the black wall looming almost upon them and jumped inside, slamming the doors. 'Sandstorm,' Blake said, as Cooke started to ask again. A harder gust of wind lashed at the truck, stinging their faces with sand. 'Close your window,' Blake said as he cranked up his own. 'Those baby zephyrs are the advance guard. I think we're in for a real one.'

The black wall struck a moment later with a thunderous roaring and screaming, smashing at the little truck with savage blows and enveloping them in darkness. Sand and gravel slashed against the windows with a sharp, dry hiss and, above the roar of the wind, Blake could hear a violent thumping as the wind found an empty and unfastened water can in the bed of the truck and slammed it back and forth. The pounding ceased abruptly and Blake had a mental vision of their water can going in kangaroo leaps across the mountainside.

'. . . Long do you think?' Cooke shouted through the darkness.

'What?' Blake asked, shouting, himself, to be heard above the howl and roar of the storm.

'How long do you think this will last?'

'Don't know. Sometimes a sand storm will last an hour, sometimes ten hours.'

He felt inside the utility box under the dash and found a flashlight. Its beam had the appearance of a three-dimensional cone in the dust-filled air of the cab.

'How did that get in here so quick?' Cooke demanded.

'It comes in every little crack and crevice,' Blake answered, flashing the light through the windshield. The light revealed the dust and sand flowing past them with incredible speed. There were bright gleams in the torrent of air and sand as larger pieces of diamond reflected the light for a microsecond and bits of dead vegetation were being carried along.

Blake shut off the light and made himself as comfortable as possible in his half of the small cab. 'You might as well try to make your mind a contented blank for an indefinite number of hours,' he advised.

Cooke followed his advice, grumbling at the lack of leg room. He was asleep within fifteen minutes; a fact Blake confirmed

by a quick flash of the light. Blake sighed enviously and composed himself for the hours of futile thinking and worrying that would be his own lot until sleep came. There was, in the genial Cooke's philosophy, a blithe unconcern for 'Unborn Tomorrow and dead Yesterday.' But, while he envied Cooke for his carefree attitude, he wondered if it would be of sufficient stability to survive the eventual recognition of a not-so-remote possibility – that all their efforts to leave their shining prison might prove to be futile.

The wind was shaking the truck and roaring with undiminished fury when he finally went to sleep, still worrying about the diamond dust that was being driven into every tiny crack about the truck wherever two parts of metal moved against each other. Silica, over a period of time, would ruin machinery. This was diamond, not silica; this had a hardness of forty-two, not seven—

He awoke at dawn, stiff and cramped, with Cooke's snoring loud in the silence that had replaced the storm. He jabbed an ungentle elbow into Cooke's ribs. 'Wake up – the storm is over.'

'Huh?' Cooke blinked and straightened with a moan. 'My leg's been asleep so long it – Hey! What happened to our windows?'

'We now have frosted glass all around,' Blake said, rolling down the opaque window on his own side. 'Diamond sand is really tough on glass.'

He stepped out of the truck into the calm morning air and looked at the damage. Cooke came around from the other side and stared open-mouthed at the bright, gleaming metal side of the truck where, before, there had been a thick coat of hard red enamel.

'It looks like we need a new paint job,' he said at last. 'And we'll have to knock a hole in the windshield to see how to drive to camp.'

Blake lifted the motor cover and ran a finger through the blanket of diamond dust that covered every part of the motor. It was heaped on more thickly where there had been grease or oil to hold it.

'What do we do about that?' Cooke asked.

'Nothing. If we should try to wipe it off, it would cause it to work in deeper. We can only let it stay and hope the grease will keep most of it from getting any deeper into the moving parts.'

'I wonder how they made out at camp?' Cooke asked, as Blake lowered the motor cover.

'I was wondering the same thing. We'd better let the canyons to be prospected between here and camp wait for the time being. They're all near enough to camp that we can walk out to look at them, anyway.'

They removed the opaque windshield and got under way, the steering wheel and gearshift lever grating harshly. They saw something shining metallically a half mile farther on and it proved to be their errant water can; lodged beneath a thorn bush, stripped of its enamel and polished to a high lustre.

Taylor and Lenson were waiting outside the ship when they drove up. The question and hope was plain to be seen on Lenson's face but there seemed an almost imperceptible anxiety tingeing the questioning look on Taylor's face.

Blake shut off the motor and climbed out. 'Nothing,' he said. 'Not a sign of uranium.'

Lenson's face reflected a natural disappointment but Taylor seemed to have something on his mind more serious than simple disappointment. 'Then there's no hope of finding uranium in this range?' he asked.

'There was no indication whatever that there is any such thing anywhere along the range,' Blake answered. He looked towards the ship. 'Where's Wilfred?'

'He left early to spend the day prospecting. We have the ship pretty well fixed up inside and there hasn't been much to do the past few days. Now – how about other minerals? Did you find anything at all?'

'A thin seam of lead-zinc ore that carries a small percentage of cadmium. But I don't think the diamond drill could ever drill through the rock it's in.'

Lenson grinned sourly. 'I know it can't,' he said. 'We no longer have a diamond drill. While you were gone I got to looking around and found a formation that carried zircons. Since we'll need zirconium, we all three agreed it would be a

good idea to set up the drill, put down some holes and blast out some zirconium-bearing ore. We set the drill up yesterday morning. By mid-afternoon we had worn out six of our eight diamond bits and were down four inches. I came back to the ship late in the afternoon to get some more oil for the drill's motor – we've been using it and it was getting worn – and the storm hit before I could get back to the drill. I had left the drill running; its progress was so slow that it didn't need any attention. I got lost in the darkness of the storm and finally had to hole up behind an outcropping until morning. Then I saw where I was and went on to the drill. I found the sand blowing into it while it was running had ruined it. Not only the motor, but even the gears of the drill, itself.'

'It was no loss, I'm afraid,' Blake said. 'All the formations Cooke and I saw carried the same high percentage of diamond.'

'But suppose we should find some ore – how do we drill it without a drill?' Cooke asked. 'That is, suppose we find some ore that isn't so hard and filled with diamonds as to make drilling impossible.'

'In that case, we'd probably find we could fix up the old drill after all,' Blake said. He turned to Lenson. 'You said you had been using the drill's motor for something else – what was that?'

'Water pump,' Lenson said. 'It seemed like a foolish waste of effort and time to carry water to the ship's tanks in buckets, so we took the little high-speed water pump that we had brought along for the very purpose of filling the ship's tanks, took the motor off the drill – we weren't using the drill then – stripped enough tubing out of the ship's air circulating system to reach to the creek and set up our pump.' He grinned again. 'It lasted long enough to fill one tank, then the bearings went out. We fixed it and a week later, when we used it again, the bearings went out again. Finally, the last time we used it, the impellers were half abraded away as well as the bearings and shafting cut out.'

'And the motor was wearing out, too?'

Lenson nodded. 'The bank was dry and sandy where we set the pump, and breezes were always stirring up little clouds of dust. The motor was in pretty bad shape before it soaked

through our thick skulls that the dust was pure diamond dust and not at all as harmless as it looked.'

'So now you're back to carrying water in buckets?' Cooke observed. 'And Red and I are going to be back to walking. This is a cruel world to anyone accustomed to mechanized assistance.'

'About finding uranium—' Taylor said, the aura of worry still about him. 'What would you suggest next?'

'We can hike across the desert to the nearest range and see what we can find,' Blake said. 'It will be slow, doing it all on foot, but we have a boundless supply of two things on this world – time and diamonds.'

'No.' Taylor shook his head. 'Time is the very thing we *don't* have. I haven't said anything to Len or Wilfred about it yet. I wanted to wait until all five of us were here to talk over what we—'

'Hello.' Wilfred's hail interrupted Taylor and he came hurrying towards them. 'I saw your truck pull in so I turned around and came back. Any luck?'

'None,' Blake said. 'It just wasn't there to be found.'

'What was this about not having time, and something you hadn't told us yet?' Lenson asked Taylor, his eyes on Taylor's face.

The others turned their attention to Taylor as he spoke.

'I've been making daily observations with the transit, as you know,' he said. 'I've observed the apparent motion of our sun, the yellow sun, and the Thousand Suns cluster. I found that this *is* spring – whether late or early I don't know – but that's of no importance. I thought, at first, the yellow sun was swinging in its orbit around our blue-white sun. You can see the yellow sun – like a very bright yellow star – in advance of our own sun each morning. According to my observations, the yellow sun is making an apparent advance of approximately one degree every five days in front of our own sun. This happens to be what its apparent advance should be as we swing out in our orbit, so I became suspicious and made other observations. I discovered we are approaching the Thousand Suns at a speed of one hundred miles a second.'

'That's what you didn't tell us?' Lenson asked. 'I don't

understand – we'll either be long since gone from here, or long since dust, before our wandering binary reaches the nearest star of the Thousand Suns.'

'I said the apparent advance of the yellow sun is accounted for by our own orbital movement,' Taylor said. 'There is no orbital movement of the yellow sun observable. This isn't a binary – the yellow sun is a member of the Thousand Suns.'

'You mean—' Blake began.

'In approximately seven and a half months the two suns will collide.'

'And our position in our orbit at that time?'

'We'll go into the yellow sun the radius of our orbit – four hundred million miles – in advance of the collision.'

Tall Lenson barely changed expression and the surprise on Wilfred's face hardened into quick stubbornness, as though he had already decided he would refuse to accept such a fate. Cooke leaned one hip on the fender of the truck, his black eyes flickering over the others as he analysed their reactions. But for once, Blake felt, Cooke was finding nothing to amuse him.

'You're sure your observations were accurate – that there's no hope we might have already swung past the yellow sun by then?' Blake asked.

'I've made my observations as accurate as possible, and checked for errors. Our sun is moving towards the yellow sun at a hundred miles a second and a distance of slightly more than one and a half billion miles now separates them. Our observation of these suns couldn't indicate that they were not a binary during the brief period we dropped into normal space – especially with our limited means for taking observations from the ship. It was natural for us to assume that two suns so close together were a binary. Only very precise observations during the short time we observed them could have revealed the truth and we had neither the proper instruments for such observations nor any reason to think such observations were necessary.'

'It wouldn't have changed our circumstances,' Blake pointed out. 'With seven or eight months of grace, we would have landed to see what the planet had to offer in the way of mineral wealth, anyway.'

'That's true,' Taylor said. 'The result would have been the same. So here we are and we have, according to my most optimistic calculations, six months to fit our ship with a drive and get away from here as fast as we can.'

'*Six months?*' Cooke demanded. 'You said it would be seven and a half.'

'We'll have to be a long way from here by then – Aurora carries an exceptionally high percentage of carbon and you know what happens when any nuclear conversion process absorbs an excess of carbon.'

'Oh-oh – *nova*!'

'And they reach out a long, long way,' Taylor said.

'The hyperspace units – the power for them—' Wilfred began.

'If we ever find a way to power them, it will have to be en route in space,' Taylor said. 'Or that's the safest course of action for us, I would say.'

'I agree,' Blake said. 'If we can find ore pure enough, we might possibly be able to take off from here within six months. It would have to be exceptionally pure ore – it's improbable that we can find such ore but we don't know that it's impossible. The first thing we want to do is to start getting as far away from here as possible and as fast as possible. Given pure enough ores, we can do that, I think.'

'You said "improbable but not impossible",' Taylor said. 'Just how improbable do you think it is?'

'If the other ranges are similar to this one, our chances are very poor. We can try; we can go out as two different parties to save time. Cooke has had experience in the hills, now, and could go with one of you to the range north of us while I went with the other to the range south of us. If there's nothing in the adjoining ranges, I would say there is no use looking farther.'

'Why?' Lenson asked.

'Time. Time and distance. Any ore we found would have to be carried to the ship on our backs – the truck is worn out.'

'Then let's start today,' Cooke suggested. 'Since our time is so short, we shouldn't waste an hour of it. Let's start right now.'

Blake glanced at the early morning sun. 'A good idea. We certainly won't have any days to waste. We'll take along about sixty days' supply of concentrated food tablets, plus spare shoe soles and, above all, canteens.'

'The concentrated food tablets for two months—' Wilfred began doubtfully, but was interrupted.

'For roughage we can eat thorn berries,' Blake told him. 'Cooke and I tried them. They're tasteless, but they're completely harmless.' He turned to Cooke. 'You can take Wilfred across to the north range. It's nearer than the south range, and Lenson is better built for the hike across the desert to the south range than Wilfred is – it will be about three days on the water in our canteens to reach that south range.'

'And if the south range has no creeks or springs in it – how will you come back across the desert without water?' Taylor asked.

'We won't,' Blake said simply.

Cooke slid off the fender and looked at the truck, shaking his head. 'If only we could have had this truck to use—'

Blake and Lenson reached the south range on the third day of tramping across the glittering diamond sand of the desert, their throats burned and dry and their canteens empty. They found water; a seepage of sickening alkali water, but it was water. They found a creek of sweet water the next day as they started up the range's northern front, tumbling down out of the mountains and disappearing beneath the sand at the mountain's foot. It was a high, rugged range and they found other creeks and springs as they went. They reached its eastern end on the thirtieth day and turned down its southern face. They came to the last canyon on its south-west slope on the fiftieth day and knew they had failed. They had found an occasional vein of iron oxide and, once, a fairly soft vein of copper ore, but there had been no indications of uranium.

On the fifty-fourth day they reached the ship again, gaunt and ragged, with Blake's red whiskers flaming riotously and Lenson's brown beard giving him the look of a benign but destitute young religious father.

As though by prearranged plan, Cooke and Wilfred returned at the same time; Wilfred's pink face burned red by the sun,

his blond whiskers sprouting raggedly, while Cooke wore a bushy black beard that, together with his glittering black eyes, gave him an even greater appearance of piratical fierceness.

Taylor was carrying two buckets of water to the ship when the four of them appeared. He set the buckets down and waited.

'No luck,' Blake said as they drew near him.

'Same here,' Cooke said. 'That range we went to was as barren as this one.'

'I've been continuing my observations,' Taylor said. 'Everything checks with my first ones, and now we're sixty days nearer the end. We'll have to start accomplishing something pretty quick.'

'I know it,' Cooke said, scratching at his black beard, the tattered sleeve of his shirt flapping in the wind. 'But before we start any long talks on what we shall do next, let's have something to eat besides thorn berries and pills. And take a bath – I'm so covered with diamond dust that, in the nude, I'd glitter like a precious jewel.'

Taylor picked up his buckets of water. 'There's enough water for all of you to take showers,' he said, 'so long as you don't waste it. I've been busy with other things or I would have had more water carried to the ship.'

'We'll have to have a pump,' Blake said, relieving Taylor of one of the buckets. 'There's no use spending time carrying water in buckets.'

Lenson looked at him sharply to see if he were joking.

'Did you take a look at what that diamond silt in the water did to our pump?' he asked. 'It ruined it, and it was made of the hardest alloy steel.'

'We can't use any kind of pump that has moving parts of steel,' Blake said. 'No steel alloy ever made can resist diamond. And, since steel is our hardest man-made material, it's obvious we can't use any kind of a pump that has moving metal parts. So, we'll not try to fight the diamond with harder steel alloys – if we had them – we'll just overcome the abrasion problem by making a pump that has no moving parts.'

'Oh?' Cooke stared at him. 'A brilliant solution but for one thing – how do we move water without the mover doing any moving?'

'We let the water use its own velocity to force part of itself higher than the source – we make a hydraulic ram.'

'Hm-m-m!' Taylor grunted in self-disgust. 'I could have had one made long ago, in my spare time, but I never thought of such a simple solution. I kept thinking of some way to combat the diamond's abrasion, rather than how to avoid it completely.'

'But a hydraulic ram does have moving parts,' Wilfred objected. 'The valves. Without the valves alternately opening and closing, the ram wouldn't work. How do you keep valves in it?'

'The valves are so simple – one floating valve and one flap valve – that all we have to do is spray the valves and valve seats with plastic rubber. The diamond can't harm rubber – the rubber is so soft that the diamond's hardness has no effect on it.'

A shower and a full meal did much to improve the spirits of the four men, and a shave did even more to improve their appearance. Taylor brought up the subject of their next course of action and asked Blake for his opinion of the desirability of further prospecting for uranium. Blake answered the question with a suggestion.

'We'll have to rest a week, even though our time is so short,' he said, 'This time we'll have *two* deserts to cross, as well as the mountain between, and our past sixty-day diet of food tablets and thorn berries has all four of us in pretty weak condition. While we rest up I suggest we try to think of some alternative to the atomic drive. I won't argue if the rest of you want to continue looking for uranium, but I'm afraid it's hopeless. Without a truck or any other form of transportation, it would do us no good to find the ore. We're not going to be given the time to carry ore for great distances on our backs, across deserts and mountains. So, suppose for the next six days everyone makes a try at thinking up some plan other than the atomic drive?'

'The more plans, the better,' Taylor said. 'If we had a large enough selection to choose from, we could pick out one that would be sure-fire. But I can't see how we can find a quicker and simpler way to lift this ship than the way the very first ship on Old Earth was lifted – the atomic drive.'

The others felt the same way; they seemed quite willing to consider any alternate plan but with no conception of any such plans. Blake made no mention of the idea in his own mind, certain that it held their only hope for survival, but fearing its radical departure from conventional lines of thinking would cause them to reject it, despite the magnitude of its possibilities.

They made the hydraulic ram the next day and laid a line of the ship's air tubing to a point sufficiently upstream along the noisy little creek to give the necessary pressure. Shortly before the sun went down they connected the last length of tubing to the ram, then returned to the ship to wait for the first flow of water into the ship's tank. It required some time for the tubing between the ram and the ship to fill with water but the water came at last; a steady little trickle.

'You know,' Cooke remarked as he watched the tiny flow, 'those ancients weren't exactly fools.'

'At last, we've won one round in our battle with this diamond dust,' Lenson said.

'I want all of you to keep in mind how we did it,' Blake said. 'We did it by using the natural forces at hand and by *not* trying to fight the abrasiveness of the diamond grit. Remember this, in any planning you do – *you can't fight diamond with metal*!'

'I think we're all aware of that by now,' Taylor said.

'I hope so. Until we acknowledge that fact, we won't get anywhere.'

No further mention was made of their problem in the succeeding days and Blake hoped that such silence was indicative of serious thinking on their part and not merely a fatalistic acceptance of the status quo.

On the sixth day following their return they gathered in the central room of the ship for each to present his plan, if any. Blake procured a few small items from the repair room and his own locker just before the discussion began.

Taylor made a quick summary of their predicament.

'There could have been only three possible ways of leaving this planet,' he said. 'The most certain would have been to send a message to New Earth, but that's impossible. We can't repair or duplicate the smashed transmitter tubes or hyperspace transformer. Their construction calls for very complex

precision machinery as well as special alloys. We can't re-use the various alloys in the shattered tubes because exposure to the air has turned several of the more delicate alloys to dust.

'The second easiest method, and the most impossible, would be to simply wait and hope a ship comes along in time to save us. I know that we all reject *that*. That leaves only one way of leaving this world before it burns – to make a drive for our ship. And that boils down to the question: shall we continue to search for uranium and cadmium or shall we devote our time and effort to some other method of lifting the ship than an atomic drive?'

'I've kept my mind a receptive blank for six days and not one single idea has come near it,' Lenson said. 'I don't see where we have any choice – what else can we plan on with any hope at all other than an atomic drive?'

'Before we go on to new plans,' Wilfred said, 'suppose we let Blake give his opinion of the chances of finding uranium and cadmium in time to make a drive.'

'We haven't found any evidence of any uranium in three full-grown mountain ranges,' Blake said. 'There's iron, and a small amount of copper, but no radioactive elements. I don't know whether it's true of all this continent, but the section we're on is almost wholly light elements.

'I am *not* in favour of further prospecting. Our time is very limited; anything we do will have to be done without delay. Further prospecting, on foot, would require time, lots of time. Possibly the ore we want is within fifty miles of us, but how do we find it in time, on foot? Even if we found it, and in a sufficiently pure state, how do we transport it back to the ship in time? We have no truck, you know; we have only our legs and backs. If we had the time – and if this world permitted us to use the truck – I would be in favour of continuing the prospecting until we *did* find the ores we needed. The truck would shorten days of travel into hours; it would haul needed supplies and equipment to the ore and haul the ore back. But we don't have a truck any more – and we don't have the time. In my own opinion, further prospecting is a waste of our short and precious time.'

'There doesn't seem to be anyone who disagrees with you,'

Taylor said when the others remained silent. 'You paint a dark picture, but there's no denying the truth of it.'

'Do you have a plan?' Wilfred asked.

'I have. You've all been thinking along conventional lines, haven't you?'

'Such conventional lines of thinking produced the ship that brought us here,' Wilfred pointed out.

'It did, but the same conventional type of thinking is never going to lift it up again. I have an unconventional idea, and a deceptively simple question. If you can answer my question, we'll know how to make a drive for our ship.'

Blake extracted several items from his pocket: a short steel bar, a square of sheet aluminium, a piece of thin glass, and a large darning needle on a long thread. He laid them down on the table before him and continued:

'I'm afraid that conventional thinking won't work on an unconventional world. We've all been tackling our problem as though we were marooned on a counterpart of New Earth, with New Earth's dust-free air and plentiful supply of minerals. We keep thinking of a rocket drive because a rocket drive was the simplest type of drive to build on a world of machinery and radioactive ores. We have neither, here; we don't have Earth-type resources and equipment to fight a decidedly non-Earth type environment. In New Earth we would use machines – all human technological progress stemmed from that simple little thing, the wheel. Without wheels there would never have been machinery, without machinery there would never have been the atomic drive. You've all seen that we can't have wheels on *this* world. We can't have wheels, we can't have any kind of moving-parts machines on a world of diamond dust. Our own science is built on the wheel, and if we don't develop a substitute science for it, we go up in smoke in seven or eight months.'

Blake picked up the steel bar. 'There is one force that no one has mentioned, and it's a force that all the diamond dust on this world could never faze because it has no moving parts – *field-type force*.'

He picked up the needle by its thread. 'This is a common bar magnet,' he said, letting the needle click against the end of it. 'We all know that opposite poles attract, like poles repel. I pull

the needle off the end of the magnet and the needle snaps back against it the moment I release it because its lower end has been magnetized with a polarity opposite to that of that end of the bar. If I switch ends with the bar magnet, the needle, instead of being attracted to it, will swing away out on the thread to stay away from it. I have a piece of sheet aluminium here – the magnetic repulsion goes right through it. The same with this piece of glass.'

He laid the magnet and needle back down on the table. 'You four have the technical training and knowledge – I'm only a fairly competent mining engineer. But my common sense tells me the reason we can't leave here is because a field-type force, gravity, holds us here. My common sense also tells that there must be the same basic principles underlying all field-type forces; magnetism, induction, gravity. If two magnetized bodies can be made to repel each other, as well as to attract each other, is it impossible that two bodies held together by gravitational attraction could be made to repel each other?

'As I said, I think the same basic principles underlie all field-type forces. If we can learn what that principle is, we can produce a drive that operates by anti-gravity. So, this is the question I wanted to ask you: *What caused the needle and magnet to behave as they did?*'

There was silence for a while as they considered Blake's proposal. Wilfred was the first to speak.

'It's a simple phenomenon,' he said, 'and known to any child.'

'That's true,' Blake agreed. 'Any child knows what a magnet will do, but do any of you know any more about a magnet than the hypothetical child? You all know *what* a magnet will do – do any of you know *why* it does it?'

'Magnetism has been vaguely described as a force, a tension in the ether, I think,' Lenson said, somewhat uncertainly. 'I know nothing of magnetic forces, myself, since they don't enter my own field of study, but Cooke probably knows them from A to Izzard.'

'I know what a magnet will do – I don't really know why it does it,' Cooke said. 'Men have made use of magnetism and induction forces for centuries and the behaviour of such forces

is known in precise detail – but still no one knows just what these forces *are*. You can manipulate a force to your own advantage if you understand its behaviour under various conditions, but if you understand exactly what that force is, you can manipulate it to your own advantage much more efficiently.'

'I agree,' Lenson said.

'There's another field-type force we use without fully understanding it – our hyperspace drive,' Blake said. 'Theoretically, it shouldn't require such an enormous surge of power to activate the space-shift units – but we have to use that enormous surge of power to get any results. We say we "slip" or "jump" into hyperspace. We don't. We don't "slip" through that barrier – we smash our way through it with the full output of a nuclear converter. If we can learn what field-type forces are, I see no reason why we might not be able to so alter our hyperdrive that the ship's generator will supply more than enough power for it.'

'A possibility,' Cooke said.

Taylor nodded in agreement, then said, 'But, while the idea has unlimited possibilities, we haven't the slightest assurance that we'll realize any of them in the short time we have.'

'I know it,' Blake said. 'I know it's a long chance, since our time is so short. But it is a chance, and all the other plans would have been doomed to failure before we started.'

'It's something of a challenge,' Wilfred said. 'The idea appeals to me. It's true that we actually know relatively little of field-type forces; our environment was such that our technical progress led to atomic study.'

Blake looked the four men over, both surprised and relieved that they should accept his plan without argument; the only possible approach to the problem, he was convinced, that offered any hope. Taylor seemed to be the only one who had any doubts, and Blake said to him, 'What is your own opinion of my plan? Are you in favour of dropping all other plans and concentrating on the study of field-type forces?'

'My half-expressed doubts about accomplishing anything in the time we have weren't intended as an objection. It's a field of study of which we know very little, and it's a difficult field to learn. But I'm in favour of it – it, at least, isn't dependent

upon the use of moving machinery. We can study it under controlled conditions, here in the ship. In fact, I would like to suggest the study of induction fields as a starter – we can manipulate induction fields to suit ourselves, and under all kinds of conditions.'

'In all of Man's history,' Cooke said, 'since the first savage wondered why a piece of natural lodestone would attract grains of magnetite, no one has been able to discover why. But, while we don't have much time, we have a very powerful incentive. And we do know a few things about magnetism. For example: all ferrous iron with a valence of two is magnetic. Ferric iron, with a valence of three, is not magnetic. Let's find out why – an atom of iron is an atom of iron and should be magnetic whether it's combined with oxygen or not.'

'We'll need juice,' Taylor said. 'Plain, old-fashioned electricity.'

'We can manage that,' Blake said. 'The ship's generator wasn't damaged, so we'll make the only kind of engine a world without oil, coal or radioactive ores would have permitted – a steam engine. We have water, plenty of trees for fuel, and we have a lathe. There's a spare primer-thrust tube that will make a perfect cylinder.'

'How about the diamond dust in the water?' Taylor asked.

'Only clean steam will go to the cylinder, and the diamond dust won't affect the boiler as lime would. Besides, we have our water filters on the ship's tanks.'

Wilfred picked up the needle and let it swing from the thread, holding the magnet under it. 'If this magnet represented this planet and its magnetism was the force of gravity with this needle representing our ship, fitted with some gadget to make it anti-gravitic at the lower end as this needle is anti-magnetic—'

He let the needle swing on the thread, bouncing away from the repulsion of the magnet, then swinging in again, to be stopped and driven away by the invisible force.

'The invisible barrier,' he said. 'What is it? It isn't matter – not as we know matter. We call it a force, but just exactly what is it that no material – glass, metal or anything else – can bar?'

'That's the question,' Taylor said. 'It's going to be a hard one to answer.'

'It will,' Cooke said, 'but we know the answer is there if we can find it. The power we need to move this ship is all around us; we'll be looking for the secret of a power that we *know* exists.'

'And if we continued to hunt for uranium, we'd be looking for something that all the evidence shows does *not* exist,' Blake said.

Lenson shoved back his chair and got to his feet. 'Now that we know what we want to do, let's get busy,' he said. 'It will take all five of us quite a while to build that boiler and engine, so let's get started right now.'

'I agree,' Cooke said. 'We're headed for an unpleasant end at a hundred miles a second – the Bird of Time has but a little way to fly—'

'And Lo! – the Bird is on the Wing!' Wilfred finished, a rare smile on his pugnacious young face as he shoved back his own chair.

The generator was lowered from its hanging position on the wall and fastened to a new-laid flooring of steel. A gear box was made from the gears of the ship's elevator and the port-holes of the drive room were equipped with glassite windows; windows which were rendered sub-transluscent by the first sandstorm, but would still admit sufficient light for working. The boiler and engine construction progressed slowly, with the small lathe and the limited kinds of material available, but they worked steadily while the yellow star advanced farther and farther ahead of their own sun. It gleamed in the dawn sky a full hour in advance of the rising of their sun when they began the building of the engine. On the day they completed the engine it was dispelling the eastern blackness two hours before the blue-white sun brought the first touch of the rain-bow dawn and almost three hours before the sun, itself, appeared.

Blake, Cooke and Lenson toasted the steam engine on the day they completed it and gave it a successful trial run; a modest toast of one small glass each, due to the limited amount of grain alcohol in the medicine locker. Taylor and Wilfred, who never drank, had already gone into the central room to begin the job of converting it into a laboratory.

'She's not pretty,' Cooke said, indicating the shapeless boiler and engine with his empty glass, 'but beauty is as beauty does. And she spun that generator like a top.'

'She did,' Lenson said. 'As you said of the hydraulic ram – those oldtimers weren't exactly fools.'

'We have all the power we need whenever we happen to need it,' Blake said. 'Next, as soon as we get the central room converted, will be to put our ideas to the acid test.'

'They say the acid test is always sour,' Cooke said. 'We'll have to make an exception of that rule. And have you noticed our big yellow star? It's over forty degrees in advance of our sun, now – gives the illusion of travelling away from our sun, except that it keeps getting brighter.'

'We're already a fifth of the way to it,' Blake said.

'The nova created when Aurora goes into the yellow sun should be spectacular,' Cooke went on. 'And then what happens when our big blue-white sun goes into the nova? Will it produce a super-nova? No man has ever stood off and seen such a thing, you know.'

'Neither will we if we don't get busy,' Lenson said. 'Time, tide, and Aurora's rendezvous wait for no man – and here we stand with empty glasses in our hands when we should be working.'

'You're right.' Cooke said, turning to go. 'Holding an *empty* glass is about the most useless thing a man ever did.'

The central room of the ship was converted into a laboratory – or as near to a laboratory as their limited equipment would permit – and large glassite windows were fitted into holes cut in the hull; a much better form of illumination than the improvised oil lamps they had been using.

Ideas were presented in the days to come; some that were no more than the repetition of known experiments, and some that were contrary to accepted theories of magnetic and gravitic principles. The latter were, at first, presented somewhat self-consciously, and Blake and Cooke did their best to discourage such reluctance to depart from conventional thinking. As the days merged into scores of days the reluctance to present unorthodox theories vanished, and they all five adopted the policy of accepting each new theory with, as Cooke put it: 'The

assumption that every theory, no matter how fantastic, is innocent of the crime of invalidity until proven guilty.'

Each experiment was given a number, preceded by the letter X for 'Experimental,' and the data gained by the experiment filed away. Blake, whose mathematical computations as a mining engineer had never required more than trigonometric and logarithmic tables, became as proficient as the others in the use of the slide rule. His lack of advanced technical learning was, in a way, no disadvantage – he had nothing to unlearn. He absorbed all the data available concerning the actual, observed behaviour of field-type forces and rejected the adoption of any preconceived theories of the causes for such behaviour, keeping his mind open for the unbiased inspection of new concepts.

Thirty days passed and then another thirty, while the yellow star grew slowly brighter and widened the apparent distance between itself and their own sun – the apparent widening of the distance that was so belied by the yellow star's increasing brightness. The first enthusiasm of Cooke, Lenson and Wilfred gave way to a quietness, and they worked longer hours. Taylor betrayed no particular emotion, but he was up early and to bed late.

Summer solstice came and the sun ceased its apparent northward progress and began to creep to the south, almost imperceptibly at first. The desert winds came with greater frequency after solstice, hot and searing and bringing their ever present burden of sand and dust.

They had been on Aurora four months when Cooke, in a moment of grim humour, chalked a huge calendar on the wall of the laboratory. He made it thirty days wide and five rows deep. Each day that passed would be filled in with red chalk and the red squares would move across the calendar, row upon row, warning the five men who laboured in the room of the shortness of their time.

Two lines of thirty days each were chalked a solid red when they found the first key to the secret that meant their lives.

X117 lay on the laboratory table, a complex assembly of coils and electronic apparatus, with a small blue-white diamond swinging in a tiny arc just within the focal point of the induc-

tion fields. The diamond hung on a long thread, attached to a delicate spring scale with a large dial.

Cooke glanced over the assembly, then raked his heavy hair back from his face and grinned at the others. 'This,' he said, 'should be what we've been looking for.'

'You've said that every time,' Wilfred reminded him.

'Let's find out,' Blake suggested, feeling his usual impatience to learn as soon as possible if their efforts had again been in vain. 'We have full steam pressure and our engine is ready to spin the generator whenever you close the switch.'

'That's what I say – let's get the suspense over with,' Lenson said. He closed the switch that would open the steam engine's governors and the faint chuffing of it in the drive room became a fast pounding. The needle on the generator output gauge began to climb rapidly and all eyes were transferred to the dial of the spring scale.

'Twenty seconds,' Cooke said, his attention alternating between the diamond and his watch. 'It should have built up an effect by then. If it hasn't, it will look like another failure and I'll have to guess again on the success of the next one.'

No one else spoke as they watched the diamond swing gently from the long thread. It was only a small one, not more than ten grains in weight; such a small and insignificant mass to resist all their efforts to move it.

'Ten seconds,' Cooke intoned. 'Eight – cross your fingers and say a little prayer – three – two – *now*!'

The diamond continued to swing in its tiny arc and the pointer on the scale remained motionless. No one moved nor took their eyes off the diamond, even when the smell of scorched insulation became noticeable.

'It's overloaded, now,' Lenson said, but made no move to open the switch.

'Give it more,' Blake ordered. 'Give it the full output of the generator – let's be sure of it, and let it burn if it wants to.'

Lenson snapped another switch shut and the full output of the big generator surged through X117. A coil went out in a flash of blue fire and someone cried out incredulously.

In the brief instant before the coil disappeared the diamond moved – *up*.

'*It moved!*' Cooke exclaimed jubilantly. 'We're going to have our drive!'

There was a minute of quite natural elation and confused babble of excited talk during which Blake remembered to open the switch again. The muted pounding of the steam engine died away and the babble resolved itself into coherent conversation.

'We're on the right track, at least,' Blake said decisively.

'We've just done something all our science has never before accomplished,' Wilfred said. 'We've created a force of anti-gravity.'

'We have a long way to go,' Taylor said. 'We've built up a force of anti-gravity that lifted a diamond weighing ten grains – and it took the full output of our ship's generator to do it. But we now have a proven result to go on; we have the beginning of an understanding of the basic principles.'

'When we get it where we want it, I doubt that it will bear any resemblance to *this*,' Blake said, indicating the assembly on the table with his hand. 'This just happened to be the easiest way to produce a little of the force we were looking for. Like, you might say, the easiest way to produce electricity is to stroke a cat. But you wouldn't try to supply electricity for a city by having a million men engaged in stroking a million cats.'

'I have a theory,' Cooke said. 'Once we learn a little more about this force we created we can try something else – we'll try reversing the gravitic flow, rather than building up a counterflow. I want to work on that theory and see what the rest of you think of it. Such a system should require almost no power since no force would be created, merely reversed.'

'The perfect ship's drive would be a field-type drive,' Wilfred said, 'for more reasons than one. The reason I have in mind at the moment is this; there would be no limit to the speed of acceleration since the ship and its occupants would be enveloped in the driving force. It wouldn't, to the passengers, be like the rocket drive where they're actually pushed along by the seat of their pants.'

Blake nodded. 'I've been thinking of the same thing. I suppose we all have, because the only way we're going to escape that nova is to accelerate at an unheard-of velocity. We can do

that when we perfect what we're working on; with our ship and ourselves enveloped in the driving force we can accelerate *immediately* to any speed, and with no sensation of accelerating at all.'

'No more acceleration hammocks and anti-acceleration drugs,' Cooke said. 'No more long periods of reaching maximum acceleration, then other long periods of decelerating. We really have something – or will have when we're through.' He looked over at Taylor. 'How much time do we have? Did your latest observations give us as much as a day more?'

Taylor glanced at the calendar Cooke had chalked on the wall. 'Your calendar still holds good – the last day you have on it will be our last day.'

'Eighty-five days – that's not many,' Lenson said.

'No, but we're going to make progress from now on,' Blake said. 'We have something to work on; we've opened a door that no one has ever opened before.'

'And if there's another door behind the one we opened?' Lenson asked.

It was Cooke who answered, the finality of conviction in his voice. 'Then we'll open that one, too.'

Lenson's question proved to be not an idle one; there was a door behind the one they had opened. In the counter-gravity they had created lay the key to the second door, the reversal of gravity, but it eluded them as the days went by. They repeated X117 and variations of it until the experimental-data record bore the number, X135. Cooke's theory was examined and re-examined and no fallacy could be found, neither could any other theory be constructed that would fit the facts they had discovered. They accepted Cooke's theory as valid, and no one questioned the possibility of reversing gravitic flows with a negligible amount of power.

All were convinced of ultimate success – if they could but have the time.

The days fled by while they tried and tried again. They worked longer hours, all of them thinner, and the bulldog stubbornness on Wilfred's face becoming more pronounced. The yellow star crept farther ahead of their own sun, growing brighter as it went, and the red-chalked squares marched across

the calendar. Their determination increased as their days of grace melted away; a determination expressed by a silent intensity of effort by all but Cooke, whose intensified efforts were accompanied by considerable cheerful speculations upon the many pleasures New Earth would have to offer them on their return.

Blake wondered if Cooke's faith in their eventual success was as firm as he insisted, or if it was only a psychological attempt to improve not only the morale of the others but also his own. The red squares had crept across two more rows and over halfway across a third when he got his answer.

It was on the morning following the failure of X144. They had worked far into the night to complete the assembly of it and it had been devoid of observable results. The others had gone to bed to get a few hours' sleep before starting the construction of X145, but Blake had found sleep impossible. The failure of X144 exhausted every possibility but one; the one represented by the to-be-constructed X145. Theoretically, X145 would be successful – but some of the others had been theoretically certain of success until their trial had revealed hitherto unknown factors. After an hour of the futile wondering and conjecturing, Blake gave up the thought of sleep and put on his clothes.

He walked down to the creek, marvelling again at the beauty of a world so harsh and barren. The yellow star, now bright enough to cast his shadow before him, was low in the west as he walked up the creek, and the eastern sky was being touched with the first emerald glow that preceded the rainbow banners. When the sun came up it would bring another day of heat, and the dry, swirling winds would send the diamond dust along in low-flying clouds. But in the quiet of early dawn it was cool and pleasant along the creek, with the trees bordering it making a leafy green corridor along which he walked into the emerald dawn, while the fresh scent of green, living things was about him.

He saw the bulk of something red lying in the sand beside a tree, and he went over to it. It was a small mound of blood-red diamonds, and he saw that someone had selected them for their flawless perfection. He squatted beside them, leaning

back against the tree trunk and lighting a cigarette as he wondered idly who had placed them there, and why.

He forgot them as he rested and watched the emerald of the eastern sky glow deeper in colour and the first touch of iridescence come to it. Aurora, for all her grimness, was a beautiful world, and along the creek a man could almost imagine he was on New Earth, but for the glory of the dawn and the glitter of the diamond sand. The leaves of the tree over him rustled softly, and among the fresh green smells there came the scent of the red flowers that grew along the water's edge; a scent that brought a brief, nostalgic memory of the old-fashioned briar roses in his mother's garden when he was a boy. She had brought the seeds from Old Earth when she was a girl, and on Old Earth, she had told him, they grew wild.

It was hard to believe, as he sat beside the creek, that it and the sweet-scented flowers and the leaves rustling overhead were not things of some stable world, where they would remain so for uncounted lifetimes to come; where only the slow, slow dying of the sun could at last bring the end.

Gravel crunched behind him and he turned to see Cooke. 'Nice here, isn't it?' Cooke asked, sitting down near him.

Blake nodded, then said, 'I thought you were in bed?'

'And I thought you were,' Cooke replied. 'What do you think of the quality of the diamonds there beside you?'

'You're the one who piled them here?' Blake asked, surprised. 'How long has this been going on, and why?'

'Ever since I said we'd unlock that second door. We may have to leave here in a hurry, but we *are* going to leave here. I just did the logical thing of using some of my spare minutes to pile up some of the choicest diamonds where we can get them in short order.'

'Do you really believe that, or is this diamond-gathering just to bolster your confidence?' Blake asked, watching him curiously.

'What do you think?' Cooke countered.

Blake studied him, the hard jaw and broken nose, the glittering black eyes, and saw that they were not deceptive, after all. Under ordinary circumstances Cooke was easy-going and genial, but now the mask of good humour had fallen away

for the moment and the hard steel core of the man was revealed. Cooke, like the bulldog Wilfred, would be stubbornly defying their fate when Aurora went into the yellow sun.

Yet, though such stubborn faith might prove to be in vain, it had its advantages. Stubborn men died hard – sometimes it takes more than merely impossible difficulties to persuade a stubborn man to die at all.

'I think you have the right idea,' Blake said.

There was a silence as Blake returned his attention to the dawn, then Cooke remarked, 'We won't have but a few more like that – before we leave here, one sun or the other will be in view all the time. And, by then, the yellow one will be too bright to permit any sunrise effects from the other one.'

'Aurora doesn't have many days left.'

'What a show that will be!' Cooke mused. 'First a nova as Aurora goes into the yellow sun, then the big blue-white sun will go into the nova.' Then he sighed and said, 'But I sort of hate to see it. I don't care about the suns, but I hate to see Aurora go up in a blaze, no matter how glorious that blaze may be. She's a hard world on humans, but she forced us to pull ourselves up by our own bootstraps. She's a beautiful little devil and I hate to see her be destroyed.'

The good die young, Blake thought, watching the dawn flame into vivid, fiery life. Not that Aurora was good. She was cruel and beautiful; she was a splendid, glittering prison taking them with her on her swift, silent flight to extinction.

It was not the way a world should die. The death of a world should come only when the fires of her sun went out. A world should grow old and cold for millennia upon millennia; death should come slowly and quietly like that of an old, old woman. But it would not be so for Aurora; for her death would be quick and violent and she would explode a yellow sun into a nova as she died.

Two days later they were ready to put X145 to the test. It was similar to the long-past X117 in that the same blue-white diamond swung from the same long thread, but the assembly was of a different form and the steam engine was cold. They had made a battery, a simple storage battery, and X145 would either succeed or fail with the battery's small current.

The tension was far greater than it had ever been at any previous test, and even Cooke had no cheerful smile or remarks. X145 would be *the* test; if it failed all their labours leading up to it had been to a dead-end. And they would have no time to try another approach.

'I guess we're ready,' Cooke said. Blake went to the rheostat that controlled the amount of current and the others grouped about the X145 assembly.

'I'll give it the juice gradually,' Blake said. 'Although if it as much as quivers at full current, we really will have our drive.'

Blake watched the diamond as he turned the rheostat's knob. He felt the faint click of it as it made first contact, then flinched involuntarily as something cracked like a pistol shot and the diamond, thread and scale vanished. Something clattered to the floor across the room and Lenson's surprised question was cut off by a shout from Cooke: 'Look – the scale!'

He ran to where it had fallen and picked it up, holding it for all to see. There was a hole torn through it.

'How much . . . how much power did you give it?' he demanded of Blake.

'Minimum current,' Blake replied.

'Minimum current,' Wilfred murmured. 'Minimum current – *and it shot the diamond through the scale*!'

The torn scale was passed from hand to hand and the talk it engendered was both voluble and optimistic.

Cooke hurried out after another scale and Blake and Lenson connected another rheostat in series with the first, then added still another when Wilfred gave the results of his calculations on the slide rule.

Cooke returned with the scale, a much larger one, and a block of copper. 'Three?' He lifted his eyebrows towards the three rheostats. 'If we can budge a pound of copper with full current through three rheostats, then we can lift a thousand ships with our generator.'

The copper block was suspended from the scale, to swing down in the field of the X145, and Blake said, 'I'll try minimum current again, even though it may not be enough to affect it at all. We can't expect it to do anything spectacular at minimum current, I'm sure.'

He turned the rheostat knob a fraction of an inch and felt the faint click, his eyes on the copper block. There was a roar, sharp and deafening in the room, and the copper block vanished as the diamond had. A hard puff of hot air struck him and something ricocheted back down from the roof to strike him painfully on the shoulder, a fragment of metal from the scale. Wilfred was pointing upwards, yelling something. '*... Through the roof!*'

Blake looked up and saw what he meant; there was a small hole torn through the hull of the ship over their heads, a hole such as would be made by a one-pound block of copper.

'*Three rheostats*,' Cooke explained. 'We not only have the power to lift our ship; we could lift ten thousand of them!'

Cook began to make rapid calculations on his slide rule and Wilfred followed suit. Blake, curious though he was, saw no reason for three of them to work simultaneously on the same problem so he waited, as did Taylor and Lenson. Taylor was smiling; the first time in many days he had seen the old man smile.

'The problem of power for the hyperspace drive no longer exists,' Lenson said. 'We can apply the same principles to its alteration that we just now made use of and we can actually "slip" through the barrier rather than bulldozing our way through it.'

'We have a means of driving our ship and we have a means of slipping her into hyperspace,' Blake said. 'We've come mighty near to succeeding in our plans – will we have the time to succeed all the way?'

'Time?' Lenson looked surprised. 'How much time do you want? We have seven days. Isn't that enough?'

Blake shook his head. 'We can't have the ship ready in that short space of time. To leave here within seven days we'll have to—'

'Did I say ten thousand ships?' Cooke slapped his slide rule back together, his black eyes glittering with exultation. 'We could move a world with the power in that generator!'

'We've really reversed the gravitic flow,' Wilfred said, as enthused as Cooke. 'The only power required to move an

object is that for the reversing field – or whatever we should call it. This power requirement is negligible with a capital N.'

'Homeward bound!' Cooke said. 'Safe and snug beyond the nova's reach in hyperspace!'

'If we want to give up the habit of breathing,' Blake pointed out.

The four of them stared at him, and one by one their faces fell as they realized what he referred to; the thing they had forgotten in the intensity of their efforts to devise a drive.

'The ship—' Cooke was the first to express the thought in the minds of all of them. 'It leaks like a sieve!'

'How, in seven days, can we finish cutting the two halves of the ship apart, wall in the cut-off end and repair all the broken-apart seams?' Blake asked.

'We can't,' Taylor said. He sat down, suddenly old and tired, his former cheerfulness gone. 'I don't see how we could make the ship leak-proof in less than four months with the tools and materials we have.' He smiled again, but without mirth. 'But we came close to succeeding, didn't we?'

'We'll succeed,' Blake said. 'It's a tough problem, apparently, but I have an idea.'

'How about enclosing the ship in a gravitic field large enough to hold its air by plain gravity?' Wilfred asked.

'And how big a field would that have to be?' Lenson asked.

'Big,' Blake said. 'Even in hyperspace, it will take us six months to get home – or near that. Air has a tendency to leak away and dissipate into space rather easily. I doubt that we could enclose the ship in a field large enough to hold enough air to last us for six months – as I say, it leaks away into space very easily.'

'The gradual loss of our air would be an unpleasant way to die,' Cooke said. 'The ship leaks, we don't have the time to repair it, so what do we do? How do we solve that last little problem?'

'Seven days to do a four months' repair job—' Lenson sat down beside Taylor and sighed. 'It looks like we *can't* make our ship leak-proof in the time we have. But surely there is *some* way—'

'There is,' Blake said. 'We have a perfect method of both getting home and keeping air in our ship. It should be obvious to all of you.'

Questioning looks gave way to dawning comprehension. There was a long silence as they considered the plan, then Cooke said, 'After all, a fortune was what we set out for.'

'We'll have to call them in advance,' Wilfred said. 'We can't just barge in.'

Blake nodded. 'Homeward bound, safe and snug in hyperspace – but, as you say, we'll have to radio them in advance. If we just barrelled in without giving them the chance to tell us where to park, it could raise merry hell with everything.'

Bob Redmond, control-tower radio operator of Spaceport 1, New Earth, was puzzled. He scratched his thinning hair and leaned closer to the speaker. The voice from it came in distinctly, but faintly.

'Can't you step up your volume?' he asked.

'No,' the tiny voice answered. 'I told you we had to couple in the driver stage – our power stage is gone.'

'How far out are you?' Redmond asked.

'About a billion miles. Did you get what I told you? This is the *Star Scout* and we're just back from beyond the Thousand Suns. We were going to get caught by a nova—'

'I got everything,' Redmond interrupted. 'Your planet was going into the yellow sun and its high carbon content would create a nova. You learned how to control field-type forces so that you would have a drive for your ship. So you came back to New Earth – or a billion miles out from it. But why do you keep insisting that I have my superiors engage an astrophysicist to tell you where to park your ship? And another thing – you said it would take four months to make your ship leak-proof and you only had seven days. How did you do a four months' job in seven days?'

'We didn't,' the thin voice from the speaker answered. 'That's what I'm trying to tell you and that's why we'll have to have an astrophysicist define our parking place. We didn't have time to repair our ship, and we couldn't enclose it in a gravitic field large enough to hold air for six months.'

Redmond clutched his thinning hair again, feeling suddenly dizzy. 'You don't mean—'

'Yeah. We brought the planet with us.'

THE FAR LOOK

by *Theodore L. Thomas*

THE SHIP appeared first as a dot low on the horizon. The television cameras immediately picked it up. At first the ship did not give the impression of motion; it seemed to hover motionless and swell in size. Then in a few seconds it passed the first television station, the screaming roar of its passage rocking the camera slightly.

Thirty miles beyond, its belly skids touched the packed New Mexican sand. An immense dust cloud stirred into life at the rear of the ship and spread slowly across the desert.

As soon as the ship touched, the three helicopters took off to meet it. The helicopters were ten miles away when the ship halted and lay motionless. The dust began to dissipate rearward. The late afternoon sun distorted the flowing lines of the ship and made it look like some outlandish beast of prey crouched on the desert.

As the lead helicopter drew within a mile of the ship, its television camera caught the ship clearly for the first time. Telephoto lenses brought it in close, and viewers once again watched closely. They could see the pilot's head as he checked over his equipment. They looked admiringly at the stubby swept-back wings and at the gaping opening at the rear from which poured the fires of hell itself. But most of all they looked to the area amidship where the door was.

And as they watched, the door swung open. The sun slanted in and showed two figures standing there. The figures moved to a point just inside the door and stopped. They stood there looking out, motionless, for what seemed an interminable

period. Then the two figures looked at each other, nodded, and jumped out of the door.

Though the sand was only four feet below the sill of the door, both men fell to their knees. They quickly arose, knocked the dust from their clothes, and started walking to where the helicopters were waiting. And all over the country people watched that now-familiar moon walk – the rocking of the body from side to side to get too-heavy feet off the ground, the relaxed muscles on the down step where the foot just seemed to plop against the ground.

But the cameras did not focus on the general appearance or action of the men. The zoom lenses went to work and a close-up of the faces of the two men side by side flashed across the country.

The faces even at first glance seemed different. And as the cameras lingered, it became apparent that there was something quite extraordinary there. These were men, but the eyes were different. There was an expression not found in human eyes. It was a level-eyed expression, undeviating. It was a penetrating, probing expression, yet one laden with compassion. There was a look in those eyes of things seen from deep inside, of things seen beyond the range of normal vision. It was a far look, a compelling look, a powerful look set in the eyes of normal men. And even when those eyes were closed, there was something different. A network of tiny creases laced out from the corners of each eye. The crinkled appearance of the eyes made each man appear older than he was, older and strangely wizened.

The cameras stayed on the men's faces as they awkwardly walked towards the helicopters. Even though several dignitaries hurried forward to greet the men, the camera remained on the faces, transmitting that strange look for all to see. A nation crammed forward to watch.

In Macon, Georgia, Mary Sinderman touched a wetted finger to the bottom of the iron. She heard it pop as she stared across her ironing board at the television screen with the faces of two men on it.

'Charlie. Oh, Charlie,' she called. 'Here they are.'

A dark squat man in an undershirt came into the room and

looked at the picture. 'Yeah,' he grunted. 'They got it all right. Both of 'em.'

'Aren't they handsome?' she said.

He threw a black look at her and said, 'No, they ain't.' And he went out of the door he had come in.

In Stanford, Connecticut, Walter Dwyer lowered his newspaper and peered over the top of it at the faces of two men on the television screen. 'Look at that, honey,' he said.

His wife looked up from her section of the paper and nodded silently. He said, 'Two more, dear. If this keeps up, we'll all be able to retire and let them run things.' She chuckled and nodded, and continued to watch the screen.

In Boise, Idaho, the Tankard Saloon was doing a moderate business. The television set was on up over one end of the bar. The faces of two men flashed on the screen. Slowly a silence fell over the saloon as one person after another stopped what he was doing to watch. One man sitting in close under the screen raised his drink high in tribute to the two faces on the screen. And every man in the place followed suit.

In a long low building on the New Mexican flats, the wall TV set was on. A thin, earnest-faced young man wearing heavy glasses sat stiffly erect on a folding chair in front of the screen watching the two faces. He glanced briefly aside with a faint air of disapproval at the pipe being contentedly puffed on by an older man who stood near. He turned back to the screen and his disapproval vanished. 'Dr Scott,' he said, 'they both have the look.'

The older man nodded wordlessly. They watched the awkwardness of the two men, apparent even from a view confined to their faces.

The young man said, 'How long will it be before they arrive here, doctor?'

'About half to three-quarters of an hour. They've got to get the red plush carpet laid out for them first.'

'Dr Scott, do you think you'll be able to find out anything this time?'

A slight urge to tell this young man to keep his big fat mouth shut rose up in Dr Scott. He noted the urge and catalogued it

neatly in the niche filled with the urges of older, experienced men towards young naïve men who believe everything they learned at college, and no more.

But Dr Scott answered gently, 'I don't know, Dr Webb, I don't know. We've examined sixteen of these fellows without finding out anything. I don't know why we should now.'

'Have you no theories to explain it?'

'No. I have no theories. Once I had theories, but I haven't any any more.' And Scott brought out a match, struck it, and began ejecting great sheets of flame and smoke from his pipe.

Webb quietly watched the scene on the screen. He saw the two men shake hands with an impressive assortment of generals, defence officials, air officials, space officials, and the assorted lot that clusters around such dignitaries.

Webb said, 'Have you isolated all the factors resulting from your choice of men?'

Scott pulled reflectively on his pipe a time or two, and said, 'As far as we've been able, yes.'

'And you found nothing, even though you've been highly selective in picking the men?'

Again the reflective puffs of smoke; then, 'Well, I'm not sure I know what you mean when you say "highly selective." We look for a combination of qualities, not any one or two or three qualities.' More smoke. 'Suppose you had to choose a man who was a good electrical engineer and who was also a good mule skinner. You'd find that the best man you could get would not be the best electrical engineer, nor would he be the best mule skinner. Well, that's our problem, only ten times worse. We look for men with the combination of technological and psychological qualities that we know best equips the men for survival on the moon. But as soon as you try to isolate any one of the various qualities, you'll find there are thousands of other men that outshine ours in that particular quality. It's the combination that counts.'

Webb hadn't taken his eyes off the handshaking and speech-making on the screen, but he had been listening to Scott.

Webb said, 'Well, isn't it the combination that does it then? The good all-around men?'

'It might be,' said Scott, 'except for one thing. When we

started this project we didn't know as much as we know now. The first ten men were not selected the way we select them now, yet the same ratio of them developed the far look. Two of them died on the Moon, and that helped teach us how to better select the ones that can survive. The point is that our selection system affects survival but doesn't seem to affect the far look.'

Webb nodded. He watched the two men board a helicopter and saw it take off. The screen faded to a blare of martial music and then came to life on a toothy announcer praising the virtues of a hair shampoo. Webb snapped the set off, turned to Scott, and said, 'Don't all these men go through some experience in common?'

Scott pulled hard at his pipe, but it was out. He reached in a side pocket and pulled out a match the size of a small pine tree. He struck it under the table, held it poised over the bowl, and said, 'They go through a great many experiences in common. They go through two years of intensive training. They make a flight through space and land on the Moon. They spend twenty-eight days of hell reading instruments, making surveys, and collecting samples. They suffer loneliness such as no human being has ever known before. Their lives are in constant peril. Each pair has had at least one disaster during their stay. Then they get their replacements and come back to Earth. Yes, they have something in common all right. But a few come back without the far look. They've improved; they're better than most men here on Earth. But they are not on a par with the rest of these returning prodigies with crinkles around their eyes. Talk about *Homo superior*. We're making about two of them a month, and we haven't the foggiest idea of how we're doing it. *Ouch*.' And he flung the burnt-out pine tree into an ash tray.

Webb looked at him quizzically and then glanced at his watch. 'Ten minutes,' he said, 'they'll be here in ten minutes.' He walked to the window and looked out, listening to the hissing and bubbling of Scott's pipe going through the throes of being relighted. Webb said, 'I suppose these two will become just as successful as the others. They've got "the far look", as you and the newspapers call it.'

'Yes, they've got it. And they'll be as good as the others, too. I don't know whether they'll go into business or politics or

science or art; but whatever it is, you can bet they'll be better at it than anybody else has ever been.'

Webb continued to look out of the window for a while, trying to fit this latest information into his general background of knowledge. It would not fit. He shook his head and turned from the window and said, 'We are missing something. Somewhere there is an element we are unaware of. These men must know what it is. They are keeping it from us, knowingly or unknowingly. All we have to do is dig out that missing element and I venture to say we will have the answer. It's as simple as that.'

Scott looked at him. He puffed gently a time or two to slow the welling up of anger. He took the pipe from his mouth and said softly, 'These men are concealing nothing, as far as our best efforts can show. We've pumped them full of half a dozen truth drugs. We've doped them and subjected them to hypnosis. On top of that they have all been completely frank and open with us. Maybe they're concealing something, but I doubt it very much.' And he put the pipe back in his mouth and clamped down on it hard.

Webb shook his head again. 'I don't know. There's something missing here. I certainly mean to put these subjects through exhaustive tests. I'll dig something out of them.'

The anger in Scott brought a flush to his face. He cupped the pipe bowl and studied the grey ashes while he considered whether a wrathful response would merely be a venting of his own anger or a real help to Webb. He decided that Webb might profit with a little cushioning against the shock he was due to receive in a very few minutes now. Scott pointed the stem of the pipe at Webb as he crossed the room towards him. He stopped in front of Webb and touched him on the lapel of the coat with the bit as he said, 'Look here, young fella, these "subjects" as you call them are like no subjects you ever had or conceived of. These men can twist you and me up into knots if they want to. They understand more about people than the entire profession of psychiatrics will learn in the next hundred years. These men are intellectual giants with a personality that can curl you up on the floor.'

He put the pipe in his mouth and said, more gently, 'You are in for a shock, Dr Webb. I'm telling you this so you won't be

quite as crushed when you meet these men. You've read about them, studied their histories, I know, but no mere description does justice to the force of their personalities. These two particular men are fresh from the Moon and do not yet fully realize the immense impact they have on people. Now you'd best get yourself ready for quite an experience. You'll need all your strength to preserve an ounce of objectivity.'

The murmur of approaching motors broke into the ensuing silence. Webb did not hear them at first; he stared at Scott, mouth slightly open. The murmur grew to a roar as the helicopters landed outside the building. Webb turned to look out of the window again, but the men dismounted on the far side of the plane and disappeared through a door in the building. In a moment footsteps sounded outside in the hall and the door crashed open.

Webb turned to see the two men with crinkles surrounding their eyes walk into the room. The taller of the two looked at Webb and Webb felt as if struck by a hot blast of wind. The level eyes were brilliant blue and seemed to reach into Webb and gently strum on the fibres of his nervous system. A sense of elation swept through him. He felt as he had once felt standing alone at dusk in a wind-tossed forest. He could not speak. His breath stopped. His muscles held rigid. And then the blue-eyed glance passed him and left him confused and restless and disappointed.

He dimly saw Scott cross the room and shake hands with the shorter man. Scott said, 'How do you do. We are very glad for your safe return. Was everything in order when you left the Moon?'

The shorter man smiled as he shook Scott's hand. 'Thank you, doctor. Yes, everything was in order. Our two replacements are off to a good start.' He glanced at the taller man. They looked at each other, and smiled.

'Yes,' said the taller man, 'they are off to a good start. Fowler and McIntosh will do all right.'

Don Fowler and Al McIntosh still had the shakes. After six days they still had the shakes whenever they remembered the first few moments of their landing on the Moon.

The ship had let down roughly. Fowler awkwardly climbed out through the lock first. He turned to make sure McIntosh was following him and then started to move around the ship to look for the two men they were to replace.

The ship lay near a crevice. A series of ripples in the rock marred the black shiny basalt surface that surrounded the crevice. The surface was washed clean of dust by the jets of the descending ship. As Fowler walked around the base of the ship his foot stepped into the trough of one of the ripples in the rock. It threw him off balance, tilted him towards the crevice. He struggled to right himself. Under Earth gravity he would simply have fallen, but under Lunar gravity he managed to retain his feet. But he staggered towards the crevice, stumbling in the ripples, unable to recover himself in the unaccustomed gravity. McIntosh grabbed for him. But with arms flailing, body twisting, feet groping, he disappeared down the crevice as if drawn into the maw of some hungry beast. McIntosh staggered behind him. His own feet skidded on the ripples in the hard, slick basalt. He, too, bobbled his way to the lip of the crevice and toppled in.

Thirty feet down the crevice narrowed to a point where the men could fall no farther. Both found themselves pinned firmly in place. Fowler was head down and four feet to McIntosh's left. They were unhurt, but they began to worry when a few struggles showed them how firmly the slick rock gripped their spacesuits. The pilot of the spaceship, sealed in his tiny compartment, could not help them. The two men they were to replace might be miles away. The radios were useless for anything but line-of-sight work. So they hung there, waiting for something to happen.

Although they were completely helpless and hadn't the slightest idea of how to get out of their predicament, their training on Earth asserted itself. Fowler spoke first.

'Say, Mac. Did you get a chance to see what the Moon looks like before you joined me down here?'

'No. I had sort of hoped you'd noticed. Now we don't have a thing to talk about.'

Silence, then,

'This is one for the books,' said Fowler. 'We spend ten

seconds on the surface of the Moon and an undetermined period of time some odd feet beneath it. Can you see anything? All I can see is the bottom of this thing and all I can tell you about it is that it's black down there.'

'No. I can't tilt my head back far enough to see out. I have a nice view of the wall, though, Dense, igneous, probably of basic plagioclose. Make a note of that, will you?'

'Can you reach me?'

'No. I can't even see you. Can you—'

'What are you fellows doing down there?' A new voice broke into the conversation. Neither Fowler nor McIntosh could think of an answer. 'Stay right there,' the voice continued, with something that sounded suspiciously like a chuckle in it. 'We'll be down to get you out.'

Both of the pinned men could hear a rock-scraping sound through their suits. Two pairs of hands rocked each man free of the walls and lifted him up to where he could bridge the crevice with knees and back. McIntosh was the first to be freed and he watched with close interest the easy freedom of movement of the two spacesuited figures as they released Fowler, turned him right side up, and lifted him up to where he could support himself in the crevice. All four then worked their way up the slick walls by sliding their backs up one wall while bracing their feet against the opposite wall.

It took Fowler and McIntosh appreciably longer to climb to the surface than the other two. There had been no words spoken in the crevice and there was little to say now. Fowler and McIntosh each solemnly shook hands with the other two. The clunk of the metallic-faced palms of the spacesuit and the gritty sound of the finger, wrist, and elbow joints made hand-shaking a noisy business in a spacesuit.

The two men led Fowler and McIntosh around to the other side of the spaceship and pointed westward across Mare Imbrium. One of them said, 'About half a mile over there behind that rise you'll find the dome. About eight miles south of here you'll find the latest cargo rocket – came in two days ago. The terrain is pretty rough, so you'd better wait a few days to get used to the gravity before you go after it. We left some hot tea for you at the dome. Watch yourselves now.' And again

there was their noisy business of shaking hands. Both Fowler and McIntosh tried to see the faces of the two men they were replacing, but they could not. It was daytime on the Moon and the faceplate filters were all in place. Their radio voices sounded the same as they had on Earth.

The two disappeared into the ship with a final wave of hands. Fowler and McIntosh turned and carefully and awkwardly moved westward away from the ship. A quarter of a mile away they turned to watch it and for the first time the men had the chance to see the actual moonscape.

Pictures are wonderful things and they are of great aid in conveying information. The two men were prepared for what they saw, yet they were deeply shocked. Words and pictures are often adequate to impart a complete understanding of a place or event. Yet, where human emotions are intertwined with an experience, mere words and pictures are inadequate.

And so Fowler and McIntosh reeled slightly as the garish barrenness of the moonscape impressed itself on their minds. It might well be that on Earth there existed similar wild wastelands, but they were limited, and human beings had crossed them, and human beings could stand out on them unprotected, and feel the familiar heat of day and the cold of night. Here there was only death for the unarmoured man, swift death like nothing on Earth. And nowhere were there human beings, nor any possibility of human beings. Only the darker and lighter places, no colour, black sky, white spots for stars, and the moonscape itself - nothing but brilliant grey shades of tones between the white stars and the black sky.

So Fowler and McIntosh, knowing in advance what it would be like, still had to struggle to fight down an urge to scream at finding themselves in a place where men did not exist. They stared out through the smoked filters, wide-eyed, panting, fine drops of perspiration beading their foreheads. Each could hear the harsh breath of the other in the earphones, and it helped a little to know they both felt the same.

A spot of fire caught their attention and they turned slightly to see. The spaceship stood, ungainly and awkward, with a network of pipework surrounding the base. The spot of fire turned into a column of fire and the ship trembled. The column pro-

duced a flat bed of fire on the surface of the Moon and the ship rose slowly. There was no dust. A small stream of fire reached out sideways as a balancing rocket sprang to life. The ship rose farther, faster now, and Fowler and McIntosh leaned back to watch it. Once it cleared the Moon's horizon it lost apparent motion; it seemed to hover merely, and to grow smaller. They watched it until the fire was indistinguishable with the stars, then they looked around again.

It was a little better this time, since they were prepared for an emotional response. But in another sense it was worse, for they were truly alone now. The horror of utter aloneness again welled up inside them. And, without knowing what they were doing, they drew closer together until the spacesuits touched. The gentle thud registered in each consciousness and brought their attention in to themselves. They pressed together for a moment while they fought to organize their thoughts.

And then McIntosh drew a long deep breath and shook his head violently. Fowler could feel the relief it brought. They moved apart and looked around.

McIntosh said, 'Let's go get that tea they mentioned.'

'Right,' said Fowler. 'I could use some. That's the dome there.' And he pointed west.

They headed for it. They could see the dome in every detail, and as they approached, the details grew larger. It was almost impossible to judge distances on the Moon. Everything stood out with brilliant clarity no matter how far away. The only effect of distance was to cause a shrinking in size.

The dome was startling in its familiarity. It was the precise duplicate to the last bolt of the dome they had lived in and operated for months in the hi-vac chambers on Earth.

The air lock was built to accommodate two men in a pinch. They folded back the antennas that projected up from their packs and they crawled into the lock together; neither suggested going in one at a time. They waited while the pump filled the lock with air from the inside; then they pushed into the dome itself and stood up and looked around.

Automatically, their eyes flickered from one gauge to another checking to make sure everything was right with the dome. They removed their helmets and checked more closely. Air

pressure was a little high, eight pounds. Fowler reached out to throw the switch to bring it down when he remembered that a decision had been made just before they left Earth to carry the pressure a little higher than had been the practice in the past. A matter of sleeping comfort.

'How's the pottet?' asked McIntosh. His voice sounded different from the way it had on Earth.

Fowler noted the difference – a matter of the difference in air density – as he crossed the twenty-foot dome and squatted to look into a bin with a transparent side. The bin bore the label in raised letters, Potassium Tetraoxide.

On Earth, water is the first worry of those who travel to out-of-the-way places. Food is next, with comfort close behind, depending on the climate. On the Moon, oxygen was first. The main source of oxygen was potassium tetraoxide, a wonderful compound that gave up oxygen when exposed to moisture and then combined with carbon dioxide and removed it from the atmosphere. And each man needed some one thousand pounds of the chemical to survive on the Moon for twenty-eight days. A cylinder, bulky and heavy, of liquid air mounted under the sled supplied the air make-up in the dome. And a tank of water well insulated by means of a hollow shiny shell open to the Moon's atmosphere, gave them water and served in part as the agent to release oxygen from the pottet when needed.

The dome was checked out and by common consent both men swung to the radio, hungry for the reassuring sound of another human voice. McIntosh tuned it and said into the mike, 'Moon Station to Earth. Fowler and McIntosh checking in. Everything in order. Over.'

About four seconds later the transmitter emitted what the two men waited to hear. 'Pole Number One to Moon. Welcome to the network. How are you, boys? Everything shipshape? Over.'

McIntosh glanced at Fowler and a vision of the crevice swam before them. McIntosh said, 'Everything fine, Pole Number One. Dome in order. Men in good shape. All's well on the Moon. Over.'

About three seconds' wait, then, 'Good. We will now take up Schedule Charlie. Time, 0641. Next check-in, 0900. Out.'

McIntosh hung up the mike quickly, and hit the switches to save power.

The two men removed their spacesuits and sat down on a low bench and poured tea from the thermos.

McIntosh was a stocky man with blue eyes and sandy hair cut short. He was built like a rectangular block of granite, thick chest, thick waist, thick legs; even his fingers seemed square in cross section. His movements were deliberate and conveyed an air of relentlessness.

Fowler was slightly taller than McIntosh. His hair and eyes were black, his skin dark. He was lean and walked with a slight stoop. His waist seemed too small and his shoulders too wide. He moved in a flowing sinuous manner like a cat perpetually stalking its prey.

They sipped the hot liquid gratefully, inhaling the wet fragrance of it. They carried their cups to the edge of the dome and looked out of the double layer of transparent resin that served as one of the windows. The filter was in place and they pushed against it and looked out.

'Dreary looking place, isn't it?' said Fowler.

McIntosh nodded and said, 'Funny, you don't get the feel of the complete barrenness by looking at pictures.'

'I noticed that, too.'

They sipped their tea, holding it close under their noses when they weren't drinking, looking out at the moonscape, trying to grasp it, adjusting their minds to it, thinking of the days ahead, and sipping their tea.

They finished, and Fowler said, 'Well, time to get to work. You all set?'

McIntosh nodded. They climbed into their spacesuits and passed through the lock, one at a time. They checked over the exterior of the dome and every piece of mechanism mounted on the sled. Fowler mounted an outside seat, cleared with McIntosh, and started the drive motor. The great sled, complete with dome, parabolic mirror, spherical boilers, batteries, antennas, and a complex of other equipment, rolled slowly forward on great, sponge-filled tyres. McIntosh walked beside it. Fowler watched his odometer and when the sled had moved five hundred yards he brought it to a halt. He dismounted and

the two of them continued the survey started months back by their predecessors.

They took samples, they read radiation levels, they ran the survey, they ate and slept, they took more samples. They kept to a rigid routine, for that was the way to make time pass, that was the way to preserve sanity.

The days passed. The two men grew accustomed to the low gravitation, so they recovered the cargo rocket. Yet they moved about with more than the usual caution for Moon men; their experience of the first few seconds on the Moon loomed forbiddingly on their minds. They had learned earlier than the others that an insignificant and trivial bit of negligence can cost a man his life.

So the days passed. And, as time went by, they became aware of another phenomenon of life on the Moon. On Earth, in an uncomfortable and dangerous situation, you become accustomed to the surroundings and can achieve a measure of relaxation. Not on the Moon. The dismal bright and less-bright greys, the oppressive barrenness of the grey moonscape, the utter aloneness of two men in a grey wilderness, slowly took on the tone of a grey malevolence seeking an unguarded moment. And the longer they stayed the worse it became. So the men kept themselves busier than ever. They accomplished more and more work, driving themselves to exhaustion, sinking into restless sleep, and up to work some more. They made more frequent five-hundred-yard jumps; they expanded the survey; they sought frozen water or frozen air deep in crevices, but they found only frozen carbon dioxide. They kept a careful eye on the pottet, for hard-working men consume more oxygen, and the supply was limited. And every time they checked the remaining supply they remembered what had happened to Booker and Whitman.

A pipeline had frozen. Booker took a bucket of water and began to skirt the pottet bin. The bail of the bucket caught on the corner of the lid of the bin. Booker carelessly hoisted the bucket to free it. The lid pulled open and the canvas bucket struck a corner and emptied into the bin. Instantly the dome filled with oxygen and steam. The safety valves opened and

bled off the steam and oxygen to the outside, where it froze and fell like snow and slowly evaporated. The bin ruptured from the heat and broke a line carrying hydraulic fluid. Twenty gallons of hydraulic fluid flooded the pottet, reacting with it, forming potassium salts with the silicone liquid, releasing some oxygen, irretrievably locking up the rest.

Booker's backward leap caromed him off the ceiling and out of harm's way. After a horrified moment, the two men assessed the damage and calmly radioed Earth that they had a seven-Earth-day supply of oxygen left. Whereupon they stocked one spacesuit with a full supply of salvaged pottet and lay down on their bunks. For six Earth days they lay motionless; activity consumes oxygen. They lay calm; panic makes the heart beat faster and a racing blood stream consumes oxygen.

Two men lay motionless on the Moon. For four days slightly more than two thousand men on Earth struggled to get an off-schedule rocket to the Moon. The already fantastic requirements of fuel and equipment needed to put two men and supplies on the Moon every month had to be increased. The tempo of round-the-clock schedules stepped up to inhuman heights; there were two men lying motionless on the Moon.

It lacked but a few hours of the seven days when Booker and Whitman felt the shudder that told them a rocket had crash-landed near by. They sat up and looked at each other, and it was apparent that Whitman had the most strength left. So Booker climbed into the spacesuit while Whitman lay down again. And Booker went out to the crashed rocket feeling strong from the fresh oxygen in the spacesuit. He scraped up pottet along with the silica dust and carried it in a broken container back into the dome. Whitman was almost unconscious by the time Booker got back and put water into the pottet. The two men lived. And by the time their replacements arrived the dome was again in as perfect condition as it had been. Except there was a different type of cover on the pottet bin.

So Fowler and McIntosh worked endlessly, ranging far out from the dome on their survey. The tension built up in them, for the worst was yet to come. The long Lunar day was fast drawing to a close, and night was about to fall. The night was

fourteen Earth-days long. A black night broken only by the faint harsh starlight, a night where the imagination does things that the eyes would not allow in daylight.

'Well, here it comes,' said McIntosh on the twelfth Earth-day. He pointed west. Fowler climbed up on the hummock beside him and looked. He saw the bottom half of the sun masked by a distant mountain range and a broad band of shadow reaching out towards them. The shadow stretched as far north and south as he could see.

'Yes,' said Fowler. 'It won't be long now. We'd better get back.'

They jumped down from the hummock and started for the dome, samples forgotten. At first they walked, throwing glances back over their shoulder. The pace grew faster until they were travelling in the peculiar ground-consuming lope of men in a hurry under light gravity.

They reached the dome and went in together. Inside they removed their helmets and McIntosh headed for the radio. Fowler dropped a hand on his shoulder and said, 'Wait, Mac. We have half an hour before we're due to check in.'

McIntosh picked up a cloth and wiped his wet forehead, running the cloth through his sandy hair. 'Yes,' he said. 'You're right. If we check in too soon they'll worry. Let's make some tea.'

They removed their suits and brewed two steaming cupfuls. They sat down and sipped the scalding fluid and slowly relaxed a little.

'You know,' said Fowler, 'it's right about now that I'm glad we have an independent water supply. Repurified stuff would begin to taste bad about now.'

McIntosh nodded. 'I noticed it a day or two ago. I think I'd have trouble if the water weren't fresh.' And the two men fell silent thinking of Tilton and Beck.

Tilton and Beck had been the second pair of men on the Moon. Very little water was sent up in those days, only enough for make-up. Tiny stills and ion-exchange resins purified all body waste products and produced a pure clear water pre-eminently suitable for drinking. Tilton and Beck had lived on that water for weeks on Earth and they, along with dozens of

others, had pronounced it as fit to drink as clean cool spring water.

Then they went to the Moon. Two Earth-days after night fell Beck thought the water tasted bad. Tilton did, too. They knew the water was sweet and clean, they knew it was their imagination that gave the water its taste, but they could not help it. They reached a point where the water wrenched at their insides; it tasted so foul they could not drink it. Then they radioed Earth for help, and began living off the make-up water. But Earth was not as experienced in emergency rocket send-offs in those days. The pleas for decent water for the men on the Moon grew weaker. The first rocket might have saved them, except its controls were erratic and it crash-landed five hundred miles from the dome. The second rocket carried the replacements, and when they entered the dome they found Tilton and Beck dead, cheeks sunken, skin parched, lips cracked and broken, dehydrated, dead of thirst. And within easy reach of the two dried-out bodies was twenty-five gallons of clear, pure – almost chemically pure – tasteless, odourless water, sparkling bright with dissolved oxygen.

Fowler and McIntosh finished their tea and radioed in at check time. They announced that night had overtaken them. A new schedule was set up, one with far more frequent radio contacts with Earth. And immediately they set about their new tasks. No more trips far from the dome, no surveying. They broke the telescope from its cover and set up the spectrometer. Inside the dome they converted part of the drafting table to a small but astonishingly complete analytical chemical laboratory.

The sun was gone completely now, but off to the east several mountain tops still glistened like the last flame that shoots up from an expiring fire. In an hour the gleam disappeared and night was completely come.

The planners of the Moon survey from the very beginning recognized that night on the Moon presented a difficult problem. So they scheduled replacements to arrive when the Moon day was about forty-eight hours old. Thus the replacements had twelve Earth-days of sunlight on the Moon to get themselves ready for the emotional ordeal of fourteen Earth-days of darkness.

Then once, the long night was ended, they had two Earth-days of sunlight before the next replacements arrived. Such a system insured that the spaceship landed on the Moon in daylight and also allowed optimum psychological adjustment for the Moon men. Shorter periods of residence on the Moon were not feasible, since the full twenty-eight days were needed to prepare for the shuttle flight from Earth to the space station, from the space station to the Moon, and return. Then, too, at least one supply rocket a month had to be crash-landed within easy walking distance of the dome. The effort and money expended by the United States to do these things were prodigious. But with the backing of the people, the project went ahead. Future property rights on the Moon might well go to the nation that continuously occupied it.

Fowler looked up from adjusting the telescope and said, 'Look at that, Al.' His arm pointed to the Earth, brightly swimming in a sea of star-pointed blackness.

They saw the Western Hemisphere, white-dotted with clouds, and a brilliant blinding spot of white in the South Pacific off the coast of Peru where the ocean reflected the sun's light to them.

McIntosh said, 'Beautiful, isn't it? I can just about see Florida. Good old Orlando. I'll bet the lemon blossoms smell good these days. You know, it looks even better at night than it does in day.'

Fowler nodded inside his helmet as the two continued to watch the Earth. Fowler said, 'You know, we've certainly gone and loused up a good old Earth tradition.'

'What do you mean?'

'Well, picture it. A guy and his girl go out walking in the moonlight down there. They'd sigh and feel all choked up and gaze at the Moon and feel like the Moon was made for them alone. Now when they look up they know there's a couple of slobs sprinting around up here. It must take something away.'

'I'll bet,' chuckled McIntosh. 'They must either get mad at us or feel very sorry for us.'

Fowler dropped his gaze to the moonscape and looked around and said, 'It sure looks different here at night.'

They studied the eerie scene. As always, it showed nothing

but varying shades of grey, but now the tones were dark and foreboding. The sharp, dim starlight and soft Earthshine threw no shadows but spread a ghostly luminescence over ridge and draw alike. It was impossible to tell just where the actual seeing left off and the imagination began.

Fowler muttered, almost under his breath, 'The night is full of forms of fear.'

'What?'

'The night is full of forms of fear. It's a line I read some place.'

They looked around in silence, turning the ungainly space-suits. McIntosh said, 'It sure describes this place. Never saw such a weird sight.'

They finally shrugged off the fascination of the moonscape and got to work.

Several Earth-days passed. The two men kept busy making astronomical observation and checking out some of the minerals collected during the long day. They made short trips out into the region around the dome but they took no samples; they let the scintillation counters built into their suits do the probing for hot spots as they simply walked around. They never got too far from the dome or from each other. And often while they were outside striding through the moondust on their separate paths, one of them would say, 'How're things?' And the other would say, 'O.K., how're things there?' The urge to hear a human voice rose powerful and often in the Moon night.

It was on one of these outside trips that their first real panic occurred. The two men were each about a hundred yards away from the dome and on opposite sides. McIntosh did not notice a telltale slight dip in the dust where a shallow crack lay almost filled with light flourlike particles. His foot went in. He twisted and fell on his back, so that his caught leg would bend at the knee and not wrench the knee-joint of the suit. He hit with a jolt; his forward speed added to the normal speed of fall. The impact was not great but it clanged loudly inside the suit. McIntosh grunted, and said 'damn,' and sat up to free his foot. Fowler's voice sounded in his headphones. 'You O.K., Mac?'

'Yeah,' said McIntosh. 'I fell down but I'm not hurt a bit. Things are fine.'

'Mac,' Fowler's voice was shrill. 'You OK?'

'Yes. Not a thing wrong. Just took a—'

'For God's sake, Mac, answer me.' Fowler's voice was a near scream, panic bubbling through it.

The fear was contagious. McIntosh yanked his foot out of the crevice, leaped to his feet, and ran for the dome shouting, 'What is it, then ? What's the matter ? I'm coming. What is it?' And as he ran he could hear Fowler screaming now for him to answer.

McIntosh rounded the dome and almost collided with Fowler coming in the opposite direction. The two slipped and skidded to a halt, clouds of dust kicking up around their feet and settling as fast as they rose. Once stopped, the two men jumped towards each other and touched helmets.

'What is it, Walt?' shouted McIntosh.

'What happened to you?' came Fowler's voice, choked, gasping. McIntosh could hear it both through the helmet and through his headphones. It sounded hollow.

McIntosh shouted again. 'I took a little spill, that's all. I told you I was all right over the set. Didn't you hear me?'

'No,' Fowler was getting himself under control. 'I kept calling you and getting no answer. Something must be wrong with the sets.'

'Yeah. It's either your receiver or my transmitter. Let's go in and check them out.'

They entered the dome together and removed their suits. They wiped the sweat from their faces and automatically started to make tea, but they stopped. Power was in short supply during the night and hot water had to be held to a minimum. So they checked the radios instead.

They went over McIntosh's transmitter first, since he had had the fall. They soon found the trouble. A tiny grain of silica shorted a condenser in the printed circuit. It was easily fixed and then the transmitter worked again. They put on the suits and went outside. But the shock they suffered was not so easily remedied. And thereafter when they were outside they were never out of sight of each other.

Time went by. The looming loneliness of the brooding moonscape closed ever more tightly around them. Their surroundings took on the stature of a living thing, menacing, waiting, lurking. Even the radio contacts with Earth lost much of their meaning; the voices were just voices, not really belonging to people, but emanating from some ominous creature poised just over the ridge. The loneliness grew.

On Earth a man can be deep in a trackless and impenetrable jungle, yet there is a chance a fellow human being will happen by. A man can be isolated on the remotest of desert islands and still maintain a reasonable hope that a ship, or canoe, or plane will carry another human being to him. A man sentenced to a life of solitary confinement knows for certain that there are people on the other side of the wall.

But on the Moon there is complete aloneness. There are no human beings and – what is worse – no possibility of any human beings. And never before had men, two men, found themselves in such a position. The human mind, adaptable entity that it is, nevertheless had to reach beyond its boundaries to absorb the reality of perfect isolation.

The lunar night wore on. Fowler and McIntosh were out spreading their dirty laundry for the usual three-hour exposure to Moon conditions before shaking the clothes out and packing them away till they were needed again.

Fowler straightened up and looked at the Earth for a moment, then said, 'Mac, did you ever eat in a diner on a train?'

'Sure, many times.'

'You remember how the headwaiter seated people?'

McIntosh thought for a moment then said, 'I know what you mean. He keeps them apart. He seats individuals at empty tables until there are no more empty tables; then he begins to double them up.'

'That's it. He preserves the illusion of isolation. I guess people don't know how much they need one another.'

'I guess they don't. People are funny that way.'

They grinned at each other through the faceplates, although it was too dark to see inside the spacesuits. They finished spreading the laundry and went into the dome together. Both of them had recently come to realize a striking thing. If one of

them died, the other could not survive. It was difficult enough to preserve sanity with two. One alone could not last an Earth-day. The men on the Moon lived in pairs or they died in pairs. And if Fowler and McIntosh had thought to look at each other closely, they would have noticed a few incipient lines radiating from the eyes. Nothing striking, nothing abnormal, and certainly nothing as intense as the far look. Just the suggestion of a few lines around the eyes.

The night had only two Earth-days to run. Fowler and McIntosh for the first time began to turn their thoughts to the journey home, not with longing, not with anticipation, but as a possibility of something that might happen. The actuality of leaving the Moon seemed too unreal to be true. And the cold harsh fact was that the rocket might not come; it had happened before. So though they dimly realized that in a mere four Earth-days they might leave the grim greyness behind, they were not much concerned.

A series of observations ended. Fowler and McIntosh sipped hot tea, drawing the warmth into their chilled bodies. Fowler sat perched on one end of a bench. McIntosh cupped the tea-cup in his hands and stood looking out at the lowering moon-scape, wishing he could pull his eyes from it, too fascinated by its awfulness to do so. There was complete silence in the dome.

'Don.' The word came as a gasp, as though McIntosh had called the name before he had completely swallowed a mouth-ful of tea.

Fowler looked up, mildly curious. He saw McIntosh drop the teacup, saw it bounce off the floor. He saw McIntosh straining forward, taut, neck muscles standing out, mouth open, one hand against the clear plastic.

'Don. *I saw something move out there.*' The words were shrill, harsh, hysteria in every syllable.

Fowler landed beside him in a single leap and looked, not out of the window, but at his face. At the staring, terror-filled eyes, the drawn mouth. Fowler threw his arms around Mc-Intosh's chest and squeezed hard and said, 'Easy, Mac, easy. Don't let the shadows get you. Things are all right.'

'I tell you I saw something. A sudden movement. Near that

hillock but at a greater range and to the right. Something moved, Don.' And he inhaled a great shuddering gasp.

Fowler kept his arms around McIntosh and looked out. He saw only the jagged dim surface of the Moon. For a long moment he looked out, listening to McIntosh's gasping breath, a chill fear slowly rising inside him. He turned his head to look at McIntosh's face again, and as he did he caught a flicker of motion out of the corner of his eye. He dropped his arms and jerked his head back to look out as McIntosh screamed, 'There, there it is again, but it's moved.'

The two men, both panting, strained at the window. For a full minute they stood with every muscle pulled tight, gulping down air, perspiration prickling out of their scalps and running down over face and neck. Their eyes saw fantastic shapes in the sharp dim light but their minds told them it was imagination.

Then they saw it clearly. About one hundred yards straight out in front of the window a tiny fountain of moondust sprayed upwards and outwards from a glowing base that winked out as swiftly as it appeared. Like the blossoming of a death-coloured grey rose, the dust from a handspread of surface suddenly rose and spread outward in a circle and just as suddenly fell back to the surface.

'What is it?' hissed Fowler.

'I don't know.'

They watched, the tension so great that they shuddered. They saw another one, bigger, out farther and to the left. They watched. Another, small, in much closer, the brief white base instantly flashing through shades of deeper reds and disappearing.

'Spacesuits,' gasped Fowler. 'Get into the spacesuits.'

And he turned and jumped to the rack, McIntosh alongside him. They slipped into the cumbersome suits with the swift smoothness of long practice. They twisted the helmets on.

'Radio OK?' said McIntosh.

'Check. Let's look.'

And the two jumped back to the window. The activity outside seemed to have stopped. They watched for six full minutes before they saw another of the dust fountains. After they saw it, they twisted their suits to look at each other. They were

bringing themselves under control. They were rationally trying to reason out a cause for what they saw.

'Any ideas?' said McIntosh.

'No,' said Fowler. 'Let's look out of the other windows and see if we see anything.'

They took up separate places at the two remaining windows.

'See anything?' said Fowler.

'Nothing. Just that hideous-looking terrain. I guess it's all on the other – Wait. There's one. Way out. I could just—'

'I've got one, too,' said Fowler. 'It's all around us. Let's call Earth.'

They moved over to the radio. Fowler turned the volume high and McIntosh hit the On switch. Almost immediately they heard a voice, mounting swiftly in loudness. 'Station Number One to Moon Station. Station Number One to Moon Station.' Over and over it repeated the words.

McIntosh touched a microphone to his helmet, flipped the Transmit switch and said, 'Moon Station to Station Number One. We hear you. Over.'

'Thank God,' came the voice. 'Listen. The Leonid meteor swarm may hit you. Find cover. Find a cave or bridge and get out of the open. Repeat. Meteor swarm may hit you. Find cover. Over.'

At the word 'meteor' McIntosh swung to face Fowler. The two moved closer together to see into the faceplates. Each face broke into a smile of relief at the knowledge of what was happening.

McIntosh touched the microphone to his helmet and said, 'We're already in it. There is no cave or other shelter within forty miles. How long do you expect the shower—'

There was a thunderous explosion and a brilliant flash of light that seared the eyeballs of both men. Something heavy dropped on them and gently clung to the spacesuits. They struggled futilely against the softness that enfolded them. McIntosh dropped the microphone and flailed his arms. Fowler sought to lift off the cloying substance; he dropped to one knee and fought it, but it would not give. Both men fought blind; the caressing enfolding material brought complete blackness.

McIntosh felt something grip his ankle and he lashed out

with his foot. He felt it crash against something hard, but something that rolled with his kick and then bore back against his legs and knocked him over. His arms were still entangled in the material but he tried to flail the thing that crawled on top of him. With a superhuman effort he encircled the upper portion of the thing with layers of the soft material and began to squeeze. Through the thickness of the material he felt the familiar outline of a helmet with a short flexible antenna reaching up from the back. And he realized he was fighting Fowler.

He felt Fowler pull away the material that separated them. Then he heard Fowler's voice.

'Mac, it's me. The dome's punctured and fallen in on us. You hear me?'

'Yes,' said McIntosh, gasping for air. 'I didn't know what happened. You all right?'

'Yes. Let's get out of here. Shoulder to shoulder till we find the lock. Let's go.'

They crawled side by side, lifting the heavy leaded plastic in front of them. They bumped into the drafting table and oriented themselves. They passed out through the useless lock and stood up outside and looked at the dome.

It is a terrible thing when a man's home is destroyed. The agony of standing and looking at the ruins of all a man holds near and dear is a heavy burden on the human heart. But on Earth a man can go elsewhere; he has relatives, friends, to turn to. His heart may be heavy, but his life is not in peril.

But Fowler and McIntosh were on the Moon. They looked at their collapsed dome and doom itself froze around their hearts. There was no one to turn to, no place to go. They stood alone on a frozen, shadow-ridden, human-hating world. They stood hand in hand with death.

They looked at the collapsed dome and the way it lay over the equipment they knew so well, softening the sharp angles, filling in the hollow spaces in the interior. The equipment outside looked stark and awkward, standing high, silhouetted against the luminous greyness, looking forlorn. The antenna caught McIntosh's eye.

He swallowed heavily and said, 'Let's radio Earth and give them the news. We were talking to them when we got hit.'

Fowler dumbly followed him to a small box on the far side of the sled and watched him remove the mike and receiver from a small box. McIntosh faced out from the sled and held the receiver against one side of the helmet and the mike against the other. Fowler slipped behind him. They stood back to back, helmets touching, McIntosh doing the talking, Fowler operating the switches and listening to all that was said. The receiver was silent when Fowler turned it on. Earth was listening, waiting. He switched to Transmit and nudged McIntosh.

'Moon Station to Space Station Number One. Over.'

In five seconds a voice came back. 'Pole Station to Moon Station. Space Station Number One is out of line-of sight. What happened? You all right?'

'Yes. Meteor punctured dome. We're outside. Over.'

It was considerably more than five seconds before the voice came back, quieter but more intense. 'Can you fix it?'

'We don't know. We'll go over the damage and talk to you soon. Out.'

McIntosh dropped his hands and Fowler turned the switch off. 'Well,' said McIntosh, 'we'd better see how bad it is. They may want to call the whole thing off.'

Fowler nodded. Getting the sled and dome and equipment to the Moon had called for prodigious effort and staggering cost. It could not be duplicated in a hurry. Their replacements were already on the way. The dome had to be operating if they were to stay. And the spaceship could only carry two men back.

'Let's look it over,' said Fowler. As they turned to climb up on the sled a fountain of dust sprang up ten feet to their right. They looked out over the sullen moonscape; the meteors were still falling. But they didn't care. They climbed up on the sled and carefully picked their way on top of the collapsed material to where they had been standing when the meteor struck. They pulled out several folds and found the hole. They inspected it with growing excitement.

The hole was a foot in diameter, neatly round. Around the perimeter was a thick ridge charred slightly on the inner edge where the thermoplastic material had fused and rolled back. The ridge had strengthened the material and prevented it from

splitting and tearing when the air in the dome rushed out. The hole in the inner layer measured about eighteen inches in diameter and the encircling ridge was even thicker.

Fowler held the hand-powered flashlight on the material surrounding the holes while he examined it carefully. 'Mac,' he said, 'we can fix it. We've got enough scrap dome plastic to seal these holes. Let's see if the meteor went out the bottom.'

They moved the holes around on the floor of the dome and found a four-inch hole through the plastic floor. Looking down it, they could see a small crater in the Moon's surface half-filled with a white solid.

McIntosh said, 'It went through one of the batteries, but we won't miss it. We've got some scrap flooring plastic and some insulation around. We can fix this, too. Our make-up air is in good supply. Don,' he stood up, 'we're gonna make it.'

'Yes,' said Fowler, letting the light go out. 'Let's radio Earth.'

They went back to the set and Fowler reported their findings. They could hear the joy come back in the man's voice as he wished them luck and told them an extra rocket with make-up air would be on the way soon. Then the voice asked, 'What about the meteor shower?'

Fowler and McIntosh looked around; they had forgotten the meteors again. The spurts of moon-dust still sprang up; they could see them clearly against the grey and black shadows.

'They're still falling,' said Fowler. 'Nothing to do but sweat them out. Call you later. Out.' And he and McIntosh sat down. A nation sweat it out with them. An entire people felt fear strike at their hearts at the thought of two men sitting beside a collapsed dome amidst a shower of invisible cosmic motes travelling at unthinkable speeds. But though the entire nation felt the horror of their position and wished them well with all its heart, it was not of the slightest aid to the two men on the Moon.

Quiet they sat and dumb. The meteors, forgotten for a moment, were to them now a part of the foreboding moon-scape, challenging the presence of men in such a place. A mere light touch from a cosmic pebble, and a human life would snuff out. They sat quiet and dumb looking at the moonscape

grim as death. A touch on the hand, the foot, is enough; it would take so little. They were something apart from the human race, men, yet not men. For no man could be so alone as they, such a speck, a trifle, a nothing, so alone were they. Quiet they sat and dumb. But each man's heart beat thick and quick like a madman on a drum. And the meteors fell.

'Mac.'

'Yes.'

'Why do we sit here? Why don't we fix it?'

'Suppose it gets hit again?'

'Suppose it does. It'll be hit whether it's collapsed or full. At least we'll have these holes patched. Maybe it'll be easier for the next team. Let's patch the holes anyway and then see what's happening.'

McIntosh stood up. 'Of course,' he said. 'We can get that much done no matter what happens.'

Fowler stood up and began to turn to the sled to climb up. A tiny spot of brightness suddenly appeared on McIntosh's left shoulder. With a feeling of blackness closing in on his body, Fowler flung himself at McIntosh and clamped a hand over the spot where the glow had been. The weight of his body knocked McIntosh down but Fowler clung to him, kept his hand pressed firmly against the spot where the meteor had hit.

'Mac,' said Fowler with the taste of copper in his mouth. 'Mac. Can you hear me?'

'I hear you fine. What's the matter with you? You like to scare me to death.'

'You got hit. On the left shoulder. Your suit must be punctured. I've got my hand over it.'

'Don, I didn't even feel it. There can't possibly be a hole there or I'd have felt the air go, or at least some of it. Take a look.'

They got to their feet. Fowler kept his hand in place while he retrieved the flashlight. He got it going and quickly removed his hand and showed the light over the spot to look. At first he saw nothing, so he held his helmet closer. Then he saw it. A tiny crater so small as to amount to nothing beyond a slight disturbance of the shiny surface of the suit. Smaller than the head of a pin it was and not as deep as it was broad.

He let the light go out and said in a choked voice 'Must have been a small one, smaller than a grain of sand. No damage at all.'

'Good. Let's get to work.'

They cut out two four-foot squares of dome material and several chunks of flooring plastic. They filled the bottom of the hole in the floor with five inches of insulation. They plugged in a wedge-shaped soldering iron and melted the plastic and worked it in to the top three inches of flooring, making an undercut to seal the hole solidly. And the floor was fixed.

Fowler pulled over the squares of dome material while McIntosh adjusted the temperature of the iron to that just below the melting point of the material. Fowler placed the first square inside the hole in the inner layer. He ran the hot blade around the ridge of fused plastic. It sealed well; the thick, leaded, shiny, dome material stiffly flowed together and solidified. Fowler sealed the patches in place with a series of five fused circles concentric to the hole and spaced about three inches apart. The inner hole was hard to work with, for he had to reach through the outer hole, but he managed it. The outer hole went fast. And when they finished they were certain that the dome was as good as ever.

They stood up from their work and looked around. Out on to the moonscape they looked long and carefully. And nowhere could they see one of the dread dust fountains. Slowly and carefully they walked to the edge of the sled and dropped off. They sat down and looked some more, carefully preventing their imaginations from picturing things more fantastic than what was already there. After ten minutes there was no doubt about it, the meteor shower was over.

'Let's blow her up,' said Fowler.

McIntosh checked the heated outlet from the air cylinder and then passed current through the coils that heated the cylinder itself. At his OK, Fowler cracked the valve and air began to flow into the dome. They watched it carefully as it rose, looking for the tell-tale white streams that told of a leak. There were none detectable in either layer. And in

half an hour the dome stood full and taut with a good five pounds pressure inside. They went in through the lock together.

McIntosh started the light tube while Fowler began a check of the gauges. In ten minutes it was apparent that things were in order. The dome was warming up too, so they took off their helmets, keeping a wary eye on the gauges. Soon they took off their suits.

The radio was still on, so Fowler called in to Earth that everything was in order. The voice was warm and friendly, congratulating them on their work and passing on the reassurances of men everywhere. They learned that their replacements were on schedule, so far. Fowler signed off.

The two men looked up at the patch on the ceiling, with its corners dangling downward. They looked at each other and Fowler started to make tea. McIntosh walked to a window and as he got there his feet started to slip out from under him. He caught himself and bent to see what he had slipped on. He found a thin sheet of ice on the floor.

'Where'd this come from?' he asked.

Fowler looked over and smiled and said, 'That's from the cup of tea you dropped when you saw the first meteor. Remember?'

'Oooh, yes.' And McIntosh chipped it up and put it in the waste pot to be purified and used on the pottet.

They had their tea, and they slept long and restlessly. They picked up their work schedule, and very soon they could see the brightness on the mountain tops to the west. The sun was coming back.

But it brought no joy. They were beyond any emotional response to night or day. Bright grey or dark grey, it did not matter. It was the Moon they were on and the lightness and darkness were all the same.

On the second Earth-day of sunlight they spoke to the approaching spaceship and made preparations to leave. The laundry was all done and ready for use. The dome was tidy. Their last job was to brew tea and put it in the thermos to keep it hot for their replacements; they would need it.

They donned their spacesuits for the last time on the Moon

and went out of the lock together. They watched the little flame in the black sky grow larger.

The ship landed and the dust settled immediately. Fowler and McIntosh walked slowly towards the ship; they did not hurry. The door in the side opened, a ladder dropped out, and two suited figures climbed awkwardly to the Moon's surface.

Before they had a chance to look around, McIntosh called, 'Over here. The dome is over here.'

The four men came together and shook hands. Fowler said, 'You can see the dome there.' He pointed to it a half mile away. 'We've left some hot tea for you there. The terrain is pretty rough so watch yourself moving around for a few days. Good luck.' They shook hands. The replacements headed for the dome while Fowler and McIntosh went to the ship and climbed in without looking back. They dogged home the lock, removed their suits, stretched out on the acceleration bunks, and called 'OK,' into the intercom.

'Right,' said the pilot from his compartment. 'Welcome aboard and stand by.'

In a moment they felt the acceleration, steadily mounting. But it soon eased off, and they slept. For most of the five-day journey they slept. And if they had thought to look at each other during their few waking hours, they would have seen nothing unusual – a few incipient, almost invisible lines around the eyes, nothing more. Neither Fowler nor McIntosh had the far look.

The ship reached the space station and tied to it. Fowler and McIntosh transferred to the shuttle and swiftly dropped towards Earth. They heard the air whistle as the air thickened.

The television cameras first picked up the ship as a small dot. People the world over craned forward to watch as the bellyskids touched the sand – people who did not know that the ship carried two Moon men who did not have the far look. The people watched the ship skid to a halt amidst a slowly settling cloud of dust.

And as they watched, the door amidships swung in. The sun slanted in through the door and showed two figures standing there. The figures moved to a point just inside the door and

stopped. They stood there motionless, looking out for what seemed an interminable period.

As Fowler and McIntosh looked out of the door, they saw the shimmering sands of the New Mexico desert. But they saw more than that. They saw more than home. They saw the spawning place of the human race. In a roaring rush of recognition, they knew they had done more than simply return to Earth. They had rejoined the human race. They had been apart and were now once again with that brawling, pesky, restless race in which all were brothers, all were one. This was not a return to Earth. This was a return to the womb, to the womb that had nourished them and made them men. A flood of sympathy and heart-felt understanding poured through them as they stared out at the shimmering sands. The kinks and twists of personality fell away and left men of untrammelled mind.

Fowler and McIntosh looked at each other, nodded, and jumped out of the door. They fell to their knees in the unaccustomed gravity. They quickly arose, knocked the dust from their clothes, and started walking to where the helicopters were waiting.

The zoom lenses on the television cameras went to work and the faces of Fowler and McIntosh side by side flashed across the country.

And the eyes were different. A network of deep tiny creases laced out from the corners of each eye. The crinkled appearance of the eyes made each man appear older than he actually was. And there was a look in those eyes of things seen from deep inside. It was a far look, a compelling look, a powerful look set in the eyes of normal men.

BIG SWORD

by *Paul Ash*

HE WAS taller than the tallest by nearly an inch, because the pod that hatched him had hung on the Tree more than twenty days longer than the rest, kept from ripening by all the arts at the People's command. The flat spike sheathed in his left thigh was, like the rest of him, abnormally large: but it was because he represented their last defence that they gave him the name, if a thought-sign can be called that, of 'Big Sword.'

He was a leader from his birth, because among the People intelligence was strictly proportional to size. They had two kinds of knowledge: Tree-knowledge, which they possessed from the moment they were born; and Learned-knowledge, the slow accumulation of facts passed on from one generation to another with the perfect accuracy of transmitted thought, which again was shared by all alike. The Learned-knowledge of the People covered all the necessities that they had previously experienced: but now they were faced with a wholly new danger and they needed somebody to acquire the Learned-knowledge to deal with it. So they made use of the long-known arts that could delay ripening of the pods on the Tree. These were not used often, because neighbouring pods were liable to be stunted by the growth of an extra-large one, but now there was the greatest possible need for a leader. The Big Folk, after two years of harmlessness, had suddenly revealed themselves as an acute danger, one that threatened the life of the People altogether.

Tree-knowledge Big Sword had, of course, from the moment of his hatching. The Learned-knowledge of the People was passed on to him by a succession of them sitting beside him in the tree-tops while his body swelled and hardened and absorbed the light. He would not grow any larger: the People made use of the stored energy of sunlight for their activities,

but the substance of their bodies came from the Tree. For three revolutions of the planet he lay and absorbed energy and information. Then he knew all that they could pass on to him, and was ready to begin.

A week later he was sitting on the edge of a clearing in the forest, watching the Big Folk at their incomprehensible tasks. The People had studied them a little when they first appeared in the forest, and had made some attempt to get in touch with them, but without success. The Big Folk used thought all right, but chaotically: instead of an ordered succession of symbols there would come a rush of patterns and half-patterns, switching suddenly into another set altogether and then returning to the first, and at any moment the whole thing might be wiped out altogether. Those first students of the People, two generations ago, had thought that there was some connection between the disappearance of thought and the vibrating wind which the Big Folk would suddenly emit from a split in their heads. Big Sword was now certain that they were right, but the knowledge did not help him much. After the failure of their first attempts at communication the People, not being given to profitless curiosity, had left the Big Folk alone. But now a totally unexpected danger had come to light. One of the Big Folk, lumbering about the forest, had cut a branch off the Tree.

When they first arrived, the Big Folk had chopped down a number of trees – ordinary trees – completely, and used them for various peculiar constructions in the middle of the clearing, but that was a long time ago and the People had long since ceased to worry about it. Two generations had passed since it happened. But the attack on the Tree itself had terrified them. They had no idea why it had been made and there was no guarantee that it would not happen again. Twelve guardians had been posted round the Tree ready to do anything possible with thought or physical force to stave off another such attack, but they were no match for the Big Folk. The only safety lay in making contact with the Big Folk and telling them why they must leave the Tree of the People alone.

Big Sword had been watching them for two days now and his plan was almost ready. He had come to the conclusion that

a large part of the difficulty lay in the fact that the Big People were hardly ever alone. They seemed to go about in groups of two or three and thought would jump from one to another at times in a confusing way: then again you would get a group whose thoughts were all completely different and reached the observer in a chaotic pattern of interference. The thing to do, he had decided, was to isolate one of them. Obviously the one to tackle would be the most intelligent of the group, the leader, and it was clear which one filled that position: he stood out among his companions as plainly as Big Sword. There were one or two factors to be considered further, but that evening, Big Sword had decided, he would be ready to act.

Meanwhile the Second Lambdan Exploratory Party had troubles of their own. Mostly these were the professional bothers that always accompany scientific expeditions; damaged equipment, interesting sidelines for which neither equipment nor workers happened to be available, not enough hours in the day. Apart from that there was the constant nag of the gravitation, twenty per cent higher than that of Earth, and the effect, depressing until you got used to it, of the monochromatic scenery, laid out in darker and lighter shades of black and grey. Only the red soil and red rocks varied that monotony, with an effect which to Terrestrial eyes was somewhat sinister. Nevertheless, the Expedition were having fewer troubles than they expected. Lambda, apparently, was a thoroughly safe planet. Whatever those grey-and-black jungles might look like it appeared that they had nothing harmful in them.

At thirty light-years away from Earth most personal troubles had got left behind. John James Jordan, however, the leader of the party, had brought his with him. His most urgent responsibility was in the next cabin, in bed and, it was to be hoped, asleep.

There was no doubt about it, a man who made his career in space had no business to get married. Some men, of course, could take their wives with them: there were three married couples on the expedition, though they were with the first party at base on the coast. But for a spaceman to marry a woman and leave her at home didn't make sense.

He wondered, now, what he had thought he was doing. Marriage had been a part of that hectic interval between his first expedition and his second, when he had arrived home to find that space exploration was News and everybody wanted to know him. He had been just slightly homesick, that first time. The idea of having somebody to come back to had been attractive.

The actual coming back, three years later, had not been so good. He had had time to realize that he scarcely knew Cora. Most of their married life seemed to have been spent at parties: he would arrive late, after working overtime, and find Cora already in the thick of it. He was going to have more responsibility preparing for the third expedition: he was going to have to spend most of his time on it. He wondered how Cora was going to take it. She had never complained when he wasn't there, during the brief period of their married life: but somehow what he remembered wasn't reassuring.

Just the same, it was a shock to find that she had divorced him a year after his departure – one of the first of the so-called 'space divorces.' It was a worse shock, though, to find that he now had a two-year-old son.

The rule in a space divorce was that the divorced man had the right to claim custody of his children, providing that he could make adequate arrangements for them during his absence. That would have meant sending Ricky to some all-year-round school. There was no sense to that. Cora's new husband was fond of him. Jordan agreed to leave Ricky with his mother. He even agreed, three years later on his next leave, not to see Ricky – Cora said that someone had told the little boy that her husband was not his real father and contact with somebody else claiming that position was likely to upset him.

Once or twice during his Earth-leaves – usually so crammed with duties that they made full-time exploration look like a holiday – Jordan got news of Cora. Apparently she was a rising star in the social world. He realized, gradually, that she had married him because for a brief time he had been News, and could take her where she wanted to be. He was vaguely relieved that she had got something out of their marriage: it was nice that somebody did. He was prepared to grant her doings the

respect due to the incomprehensible. Nevertheless he was worried, for a moment, when he heard that she had been divorced yet again and remarried – to a prominent industrialist this time. He wondered how Ricky had taken it.

His first actual contact with Cora in about seven years came in the form of a request from her lawyer that he should put his signature to an application for entrance to a school. Merely a formality. The insistence on that point roused his suspicions and he made some inquiries about the school in question.

Half an hour after getting answers he had found Cora's present address, booked a passage on the Trans-equatorial Flight and cancelled his engagements for the next twenty-four hours.

He was just in time to get aboard the flier. He had taken a bundle of urgent papers with him and he had three hours of flight in which to study them, but he hardly tried to do so. His conscience felt like a Lothornian cactus-bird trying to break out of the egg.

Why on Earth, why in Space, why in the Universe hadn't he taken some sort of care of his son?

He had never visited Antarctica City before and he found it depressing. With great ingenuity somebody had excavated a building-space in the eternal ice and filled it with a city which was an exact copy of all the other cities. He wondered why anybody had thought it worth while.

Cora's house seemed less a house than an animated set for a stereo on The Life of the Wealthy Classes. It had been decorated in the very latest style – he recognized one or two motifs which had been suggested by the finds of the First Lambdan Expedition, mingled with the usual transparent furniture and electrified drapes. He was contemplating a curious decorative motif, composed of a hooked object which he recognized vaguely as some primitive agricultural implement and what looked like a pileman's drudge – but of course that particular mallet-shape had passed through innumerable uses – when Cora came in.

Her welcome was technically perfect: it combined a warm greeting with just a faint suggestion that it was still open to her to have him thrown out by the mechman if it seemed like a

good idea. He decided to get the business over as soon as possible.

'What's the matter with Ricky, Cora? Why do you want to get rid of him?'

Cora's sparkle-crusted brows rose delicately.

'Why, Threejay, what a thing to say.'

The idiotic nickname, almost forgotten, caught him off balance for a moment, but he knew exactly what he wanted to say.

'This school you want to send him to is for maladjusted children. It takes complete responsibility, replacing parents – you wouldn't be allowed to see him for the next three years at least.'

'It's a very fine school, Threejay. Camillo insisted we should send him to the best one available.'

Camillo must be the new husband.

'Why?' repeated Jordan.

The welcome had drained right out of Cora's manner. 'May I ask why this sudden uprush of parental feeling? You've never shown any interest in Ricky before. You've left him to me. I'm not asking you to take any responsibility. I'm just asking you to sign that form.'

'Why?'

'Because he's unbearable! Because I won't have him in the house! He pries round – there's no privacy. He finds out everything and then uses it to make trouble. He's insulted half our friends. Camillo won't have him in the house and neither will I. If you don't want him to go to that school, perhaps you'll suggest an alternative.'

Jordan was shaken, but tried not to show it. 'I'd like to see him, Cora.'

As swiftly as it had arisen Cora's rage sank out of sight. 'Of course you can see him, Threejay!' She turned to the wall-speaker and murmured briefly into it. 'Who knows, maybe the sight of a really, truly father is all he needs! You can just have a nice fatherly chat with him before you have to catch your flier back, and then he'll settle down and turn into a model citizen.'

The door slid open and a boy came quietly in. He was a very

neat and tidy boy, small for his age, with a serious, almost sad expression. He said gently, 'Good morning, Cora.'

Cora spoke over her shoulder. 'Ricky, dear, who do you think this is?'

Ricky looked at the visitor and his eyes widened.

'You . . . you're Dr Jordan, aren't you? You wrote that book about Cranil – it's called "The Fossil Planet." And I saw you on the stereo two nights ago. You were talking about that place where all the forests are grey and black. And—' Ricky stopped with his mouth half open. His face went blank.

'That's who I am,' said Jordan gravely.

'I know,' Ricky swallowed. 'But you're here . . . I mean . . . this sounds silly, but I suppose . . . I mean, you wouldn't be my father, would you?'

'Don't put on an act, Ricky,' said Cora harshly. 'You know perfectly well he's your father.'

Ricky turned rather white. He shook his head. 'No, honestly. I knew my father's name was Jordan, but I just didn't connect it up. I say—' he stopped short.

'Yes, Ricky?'

'I suppose you wouldn't have time to talk to me a little? About Lambda, I mean. Because I really am interested – not just kid stuff. I want to be a xenobiologist.'

Cora laughed, a delicate metallic sound.

'Why be so modest, Ricky? After all, he's your father. He's apparently decided it's time he took an interest in you. He's due back to that place that fascinates you so much in a week or two, so I don't see how he'll do that unless he takes you with him. Why not ask him to?'

Ricky went scarlet and then very pale. He looked quickly away, but not before Jordan had had time to see the eager interest in his face replaced by sick resignation.

'Why shouldn't you take him, Threejay?' went on Cora. 'These Mass-time ships have lots of room. You've decided that it's time you were responsible for him instead of me. Those books he reads are full of boys who made good in space. Why don't you—'

'Yes, why don't I?' said Jordan abruptly.

'Don't!' said Ricky sharply. 'Please, don't! Honestly, I know

it's a joke . . . I mean I don't read that kid stuff now . . . but—'

'No joke,' said Jordan. 'As Cora says, there's lots of room. Do you want to come?'

And I'd had my psycho check only the week before, reflected Jordan, and they didn't find a thing.

He noticed suddenly that a report was moving through the scanner on his desk – the latest instalment of Woodman's researches on the sexual cycles of Lambdan fresh-water organisms. He'd intended to read that tonight instead of mulling over all this stuff about Ricky.

He pushed the switch back to the beginning, but it was no use. He remembered how he had felt – how Cora's needling had made him feel – and how Ricky had looked when he grasped that the proposal was serious. No chance at all of backing out then – not that he had wanted to. It was true that, with Mass-time flight, there was plenty of room; one feature of the drive was that within certain limits the bigger the ship the faster it would go. And he had complete authority over the selection of personnel for this second expedition, which was to reinforce the team already settled on Lambda. Ricky's inclusion was taken with a surprising lack of concern by the rest of the staff. And it had looked as though his insane action was working out all right. Until the last two days Ricky had been no trouble at all.

If anything, Ricky had been too desperately anxious to keep out of the way and avoid being a nuisance, but he had seemed completely happy. Jordan's project of getting to know him had never got very far, because his time was fully occupied, but Ricky had spent the weeks before blast-off mainly in the Interstellar Institute, chaperoned by young Woodman, who had taken a fancy to him. Jordan had taken time out once or twice during that period to worry over the fact that he was hardly seeing the boy, but once they got aboard ship it would be different.

Once aboard ship, absorbed in checking stores and setting up projects to go into operation as soon as they landed, it was – once the party's settled and working, it'll be different. He'd have some time to spare.

Unfortunately that hadn't been soon enough. He should have

paid some attention to Cora. She wouldn't have got worked up like that over nothing. She had said Ricky made trouble. He'd done that all right. And Jordan had known nothing about it till it attained the dimensions of a full-blown row.

Rivalry on the expedition was usually friendly enough. Unfortunately Cartwright and Penn, the two geologists, didn't get on. They had different methods of working and each was suspicious of the value of the other's work. But without Ricky they wouldn't have come to blows on it.

Quite accidentally the riot had been started by Ellen Scott. As soil specialist she had an interest in geology. Talking to Cartwright she had happened to say something about the date of the Great Rift. Cartwright had shot out of his chair.

'Ellen – where did you get that idea? Who told it to you?'

Ellen looked surprised.

'I thought you did, Peter. The Great Rift's your pet subject. If you didn't, I suppose it was Penn.'

'I haven't mentioned it to anyone. I only worked it out a couple of days ago. It's in my notes now, on my desk. Penn must have been going through them. Where is he?'

'Calm down, Peter!' Ellen got to her feet in astonishment. 'Probably he worked it out too – you may have mentioned something that set him on the track. He must have mentioned it to me in the last few days, I think . . . that is, if he was the one who told me.' She looked puzzled. 'I don't remember discussing it with him. No, I believe—' she broke off suddenly and refused to say any more. Cartwright, unmollified, strode off to look for Penn. Dr Scott departed in search of Ricky.

'Ricky, do you remember a day or two ago we were talking about the Great Rift?'

Ricky looked up from the microscope he was using.

'Sure,' he said. 'Why?' His smile faded and he began to look worried. 'What's happened?'

'You remember you said something about the date – that it was about fifteen thousand years ago? You did say that, didn't you?'

Ricky's expression had faded to a watchful blank, but he nodded.

'Well, who told you that? How did you know?'

'Somebody said it,' said Ricky flatly. He did not sound as though he expected to be believed.

Ellen Scott frowned.

'Listen, Ricky. Dr Cartwright's got the idea that somebody must have looked through the papers on his desk and read that date. He says he didn't mention it to anyone. There may be trouble. If you did get curious and took a look at his notes – well, now is the time to say so. It's not a good thing to have done, of course, but nobody'll pay much attention once it's cleared up.'

'I didn't look,' said Ricky wretchedly. 'I don't remember how I knew, but I didn't look. Honestly not.'

Unfortunately by that time Cartwright and Penn had already started arguing, which ended with both of them crashing through the wall of the dining cabin – which had not been built to take assaults of that kind – and throwing Barney the cook into a kind of hysterics. After that Jordan came on the scene.

Ricky had come and told him about it all. At least, he'd said that he had somehow learned that the date of the Great Rift had been fixed, and had mentioned it to Dr Scott while they were talking about geology. He didn't know how he had learned it. He denied looking through Cartwright's papers.

It was something that he had told the story, but then he must have thought that Ellen Scott would if he didn't.

Jordan's thoughts wandered off to Ellen for a moment. She was another person who believed that people who chose to work on alien planets must avoid personal ties. How right she was.

Nothing more had happened. Cartwright and Penn seemed to be on somewhat better terms, having purged their animosity. But Ricky had been going round with a haunted and hopeless look on his face and Jordan was going crazy trying to think up an approach to the matter which would not drive the boy still further away from him. But if he really made a habit of prying into private papers – and Cora had accused him of just that, after all – something must be done about it.

But what?

Jordan sighed, turned the viewer back to the beginning again and started to concentrate on Woodman's report. He had read three frames when the silence was split by a terrified bellow from the direction of the forest.

'Uelph! Uelph! Dewils. Uelph!'

Jordan shot through the door, grabbing a flashlight on the way. It was hardly needed: three moons were in the sky and their combined light was quite enough to show him the huge shape blundering among the cabins.

'Barney!' he shouted. 'Stand still! What's the matter?'

Barney – seventeen stone on Earth, over twenty on Lambda – came to a halt and blinked at the flashlight. He put up a huge hand, feeling at his face. He seemed to be wearing some sort of mask or muffler over his mouth – otherwise he was draped in flannelette pyjamas of brilliant hue and was barefooted. He ripped off the muffler – whatever it was – and threw it away. His utterance was a little clearer, but not much.

'Dewils in a voresh. Caught eee. Woot ticky tuff on a wouth.'

He was gasping and sweating and Jordan was seriously worried. Barney was a superb cook, but he was apt to get excited and the extra gravitation of Lambda produced a slight strain on his heart. At that moment Ricky appeared like a silent shadow at his father's elbow.

'What's the matter with him?' As usual the boy looked neat and alert, although at the moment he was wearing pyjamas and a robe. Jordan gestured towards his cabin.

'Take Barney in there and see what's sticking his mouth up.' Several other people had appeared by this time, including Ellen Scott in a brilliant robe and Woodman in rumpled pyjamas. Jordan sent Ellen to switch on the overhead floods and organized a search party.

Half an hour later Barney's mouth had been washed free from the gummy material which had been sticking his lips together, and he was in some shape to explain.

'I woke up suddenly lying out in the forest. All damp it was.' He groaned faintly. 'I can feel my lumbago coming on already. I was lyin' flat on my back and there was somethin' over my arms – rope or somethin'. My mouth was all plastered up and

there was a thing sittin' on my chest. I got a glimpse of it out of the crack of me eyes, and then it went. There was more of them round. They was shoutin'.'

'Shouting?' repeated Jordan. 'You mean just making a noise?'

'No, sir, they was shouting in English. I couldn't hear what, but it was in words all right. They said "People". That was the only word I got, but that's it right enough. "People." Then I got my arms free and started to swipe around. I got hold of one of them and it stung me and I let it go.'

He pointed to a neat puncture wound in the flesh at the base of his thumb. Jordan got out antiseptics and bathed it.

'I got up and ran back,' Barney went on. 'I was only a little way into the forest – I could still see the lights here. I ran as hard as I could but me feet kept slippin'.' The light of remembered panic was in his eyes. 'They stuck somethin' over me mouth – I couldn't breathe. It took me hours to get it off. I dunno what it was.'

'It was a leaf,' said Woodman. He produced a large leaf, perhaps twenty inches long: it was dark grey and one surface was smeared with a dully shining substance. 'It's been coated with some kind of vegetable gum.'

'But how did you get into the forest, Barney?' demanded Dr Scott.

Barney shook his head miserably.

'He walked,' said another of the party. 'On his own. Tracks of his feet in the mud. You've been sleep-walking, Barney.'

'Then where did he get the gag?' demanded Woodman. 'This gum comes from a plant which is quite rare and there aren't any within a hundred yards of the clearing. Besides, we found the place where he'd been lying. A couple of saplings were bent over and the ends shoved in the mud – those were used to hold his arms down, I reckon. No, he was attacked all right, but what did it?'

'I suppose,' said Dr. Scott slowly, 'this couldn't have been somebody's idea of a joke?'

There was a brief silence. Ricky looked up suddenly and caught his father's eye. His face went rigid, but he said nothing.

'We shall have to assume it wasn't,' said Jordan. 'That

means precautions. We always assumed that Lambda was a safe planet. Apparently we were wrong. Until we know what happened no one goes out alone. Those of you who have observations to make outside will have to work in pairs and with your radios turned on. We'll arrange for a monitor on all the individual frequencies. The floods had better stay on tonight and we'll have a patrol – three men keeping in touch. Two hours for each of us. Doc, will you see to Barney?'

The medical officer nodded and took Barney off to his cabin, and its specially strengthened bunk. Jordan looked thoughtfully at his son.

'You'd better get back to bed, Ricky. Unless you have anything to contribute.'

Ricky was standing stiffly upright. 'I haven't,' he said.

'Get along, then. Now about this patrol—'

Jordan put himself on the first shift of the patrol – he wouldn't be able to sleep. Why in Space had he brought Ricky? Either he had brought him into danger or – worse – Ricky was somehow at the bottom of this. He spent a good deal of time running errands for Barney. He had not seemed to mind it, but how did you tell what a boy was thinking? Might he have thought it funny to send big Barney lumbering in panic through the forest? And how could he have done it?

Jordan remembered that Ricky had once been found reading the article on Hypnosis in the Terrestrial Encyclopedia.

And if Ricky was innocent, what could be at the bottom of that ludicrous and inefficient attack?

In the top of the tallest tree available, Big Sword waited for daylight and brooded over the failure of his plan.

It was easy enough to get the biggest of the Big Folk into the forest. He had discovered that for part of the time they lay folded out flat in their enclosures, with their eyes shut, and during this time they were more sensitive to suggestion than when they were active. Big Sword, whose own eyes had an internal shutter, found eyelids rather fascinating: he had been tempted to experiment with Barney's but had refrained. He thought bitterly that he might as well have done so.

He had summoned twelve of the People and all of them thinking

together had got the Big Person to its feet and walking. It had occured to Big Sword that the receptiveness of the Big Person might be improved if they got it to lie down again. He had further decided that, in view of the blanking-out of thought when the creatures began to blow through their face-split, this aperture had better be shut.

That, he now knew, had been a mistake. No sooner was the gummed leaf in place on the Big Person's face than its eyes had popped open and showed every sign of coming right out of its face. There had been just warning enough in its thoughts for the band of People to hop out of range, except for Big Sword, who had had to use his spike for the first time in his life, to get free. Then the great arms had swung dangerously about and the creature had thrashed to its feet. After that there was no hope of making contact. Its mind was in a turmoil, making the People actively uncomfortable: they had retreated as far as they could, until the interwoven lives of trees and other forest creatures were sufficiently interposed to reduce the Big Person's thoughts to a comfortable intensity.

Big Sword had been surprised by the low level of intelligence shown by the Big Person. It had made no effort at all to understand him – its thoughts were a much worse muddle than any of the others he had investigated. Perhaps he had made a mistake? Perhaps size among these monsters was not directly connected with intelligence? Or perhaps it was an inverse relationship?

Big Sword was suddenly desperately thirsty and tired. He slid into the rain-filled cup of an enormous leaf – to soak up water through the million mouths of his skin and make his plans afresh.

The camp next morning was subdued and rather weary. Nobody had got their full sleep. Now there was all the awkward business of rearranging a full-time research programme so that nobody should have to go into the forest alone. The lurking menace which last night had provided a formidable thrill, this morning was nothing more than a vague, dreary uneasiness. Furthermore, there was always the possibility that it would turn out to be nothing more than the work of an ingenious kid with

a distorted sense of humour. And nobody liked to think what that would do to Jordan.

The working parties dispersed. Those whose work took them to the laboratory sheds tried to concentrate on it. Ricky, who had decided that this was not a morning for wrestling with lessons, slipped off to see if Barney wanted any odd jobs done, and was sent to pick fresh beans in the hydroponics shed.

The mechanical job helped to keep his mind steady. Having once got out of a nightmare, it was creeping round him again. This time with a difference.

There had got to be an explanation somewhere.

When he had left the house in Antarctica he had seemed to leave all his troubles behind. No more need to keep a continual watch on himself, in case he let something out. No more temptation, when in spite of himself he had put his foot in it again, to come out with something really startling and see what they could do about it. He was free. He had been free for months.

Then it started happening all over again. He had heard all sorts of scientific gossip – people here talked shop all the time. How was he to know what he'd heard and what he hadn't? How could he stop this happening again, now that whatever it was had followed him out here?

There was just one ray of hope. He couldn't possibly have had anything to do with what happened to Barney. If he could only find out what did that, some real solid explanation he could show everybody, then he might somehow be able to tell someone of the way he seemed to pick up knowledge without noticing it, knowledge he had no right to have—

Anyway, doing something was better than just sitting and waiting for things to go wrong again.

He delivered the beans to the kitchen and wandered out. The raw, red earth of the clearing shone like paint in the sun. In places he could still see the traces of Barney's big feet, going and coming, leading into the forest. There, among the black leaves and blacker shadows, lurked some real, genuine, tangible menace you could go for with a stick. There was a good supply of sticks stacked by his father's cabin for the

benefit of the working parties. Ricky provided himself with one.

Big Sword had finished drinking – or bathing, whichever way you looked at it – and had climbed out of the diminished pool in the leaf-cup to spread his membranes in the sun. He looked like a big bat, lying spread out on the leaf. The black webs that stretched between his arms and legs and his sides would snap back into narrow rolls when he wanted to move, but when he extended them to catch the sunlight they covered a couple of square feet. They absorbed all the light in the visible range and well into the ultra-violet and infra-red. Like most organisms on Lambda, Big Sword supported himself by a very efficient photosynthesis.

He had only just begun to make up for the wear and tear of the night – continuous activity in the dark was exhausting – when he felt the call out of the forest.

'Longfoot is going, Big Sword. Longfoot is going on the Journey. You wished to see. Come quickly!'

Big Sword's membranes snapped into thin ridges along his arms and legs and he bounded off among the trees. The Long Journey was mysterious to him, as it was to all of the People before the urge actually came to them – but the rest were content to leave it as a mystery. Big Sword wanted to know more.

He came in flying leaps to the edge of the forest, where the trees stopped short on the edge of the Great Rift. Some twenty or so of the People were gathered on the edge of the sheer cliff. Longfoot sat among them, his legs twitching occasionally with the urge to be off. As Big Sword arrived Longfoot shot to his feet, eager to depart.

'Where are you going?' demanded Big Sword. 'What will you find over there, Longfoot? Why do you want to cross the waste, with no water and no shade? You will be dried to a stick before you get halfway across.'

But Longfoot's mind was shut off; he had no longer any interest in Big Sword, or the People, or the danger to the Tree. He did not know why he had to go down on to the waste of boulders and small stones, but the urge could no longer be resisted. He dropped over the edge of the cliff, bouncing from

ledge to ledge until he reached the bottom, and set off across the wide, rock-strewn plain, along the lines of shadow cast by the newly-risen sun.

Big Sword watched him sadly. He himself was nearly a year away from feeling that call which had come to Longfoot, and the thought of his own journeying did not trouble him yet. He had been warned early of the dangers of going out on to the waste and, with the habit of logical thought strongly cultivated in him, he was troubled about what would happen. The waste stretched almost as far as he could see – at least twelve miles. At the end of it was the dark line which might have been a far-off continuation of the Forest. But why Longfoot should have wished to go there, or the many thousands of the People who had made that journey before him, Big Sword could not see.

He went back into the forest and found another perch on the edge of the clearing. Few of the Big People were in sight. He was conscious of vague alarms emanating from those who were within reach – it was an emotion foreign to his experience, but he disliked it. He wondered how to set about detaching a specimen from the group, since the direct method had proved unsuitable.

He became suddenly and sharply aware that one had detached itself already and was coming slowly towards him.

Ricky had seen the little black figure sail out of the shadows and land on an equally black leaf. It took all his concentration to make it out when it had stopped moving, but he at last managed to fix its position. Slowly, casually, he wandered towards it, observing it out of the corner of his eye.

Its body was a blob perhaps four inches long and its head about half of that, joined on by a short neck. It rested on its bent fore-limbs and the hind legs stuck up like those of a grasshopper; they looked to be at least twice as long as trunk and head together. As he sidled closer Ricky could make out the big convex eyes, grey with black slit-like pupils, filling more than half the face. Ricky knew the fauna list of Lambda by heart; this creature was not on it. It must be one of Barney's 'little devils' all right.

The creature sat quietly on its big leaf as he approached, with no sign of having noticed him. Now it was just within his reach if he stretched up. One more step and he would be right under it – ahhhh!

He had only begun to grab when Big Sword bounced over his head, landed lightly on the ground behind him and leaped sideways into another tree.

Ricky turned, slowly, and began his careful stalk again. He was murmuring softly to himself, coaxing words derived from rabbit- and guinea-pig owners of his acquaintance: 'Come on, come on! Come to uncle. He won't hurt you. Nothing to be afraid of. Come on, you little brute. Come—'

Big Sword sailed away from his grasping hand to land on a branch ten feet farther into the forest.

Ricky had entirely forgotten the prohibition on leaving the clearing; he had forgotten everything except the desire to get hold of this creature, to have it close enough to examine, to hold it gently in his hand and get it tame. His stick lay forgotten on the earth outside the forest.

Big Sword was getting irritated and slightly flustered. It was easy enough to avoid getting caught, but he didn't wish to play tag with this creature, he wanted to tame it, to make it understand him. And its mind seemed to be shut. What was more, every so often it would begin that infuriating blowing process which seemed to drain away its thoughts out of his reach. To know when it was going to grab he had to watch it the whole time. Finally he took refuge on a branch ten feet above its head and sat down to consider.

Ricky, at the bottom of the tree, was experiencing all the emotions of a dog which has treed a squirrel and now has to persuade it to come within reach. Apparently he was licked. If only the little beast would drop on to that branch there – where that applelike object was – and begin to eat it, perhaps, so that it could forget he was there . . .

Suddenly, the little brute did. At least it dropped to the lower branch and put its long-fingered hands on the round knob. Ricky's mouth opened in amazement.

His hands itched, but he kept them firmly at his sides. Perhaps he had been standing there so long that it had for-

gotten about him and thought he was part of the landscape. Perhaps if he spread his arms out very, very slowly it would take them for branches and—

Something like a small explosion happened inside his head. He blinked and gasped, forgetting all about immobility. He froze again hastily, expecting the creature to be out of sight. But it was still there.

Big Sword observed this reaction to his vehement negative with stirrings of hope. The idea of doing what this creature wanted, as a means of starting communication by demonstration, had seemed a singularly forlorn one. But the Big Creature had clearly noticed *something*.

Big Sword decided that it was time to try a suggestion of his own. He thought – hard – on the proposition that the Big Creature should turn around and look the other way.

The Big Creature ducked its head and blinked its eyes again. Big Sword got the impression that these reactions were caused by the strength of his thought. He tried again, gently.

Something was getting through. Weakly, faintly he felt a negative reply. The Big Creature refused to turn its back.

Big Sword put out another suggestion. Let the Big Creature take one step sideways, away from him.

Hesitantly, the Big Person did. Big Sword copied its direction in a joyful leap and ended on a level with the creature's head.

The next thought reached him, fuzzy but comprehensible. 'If you understand me, put your hands on top of your head.'

Watching suspiciously for any sudden move, Big Sword obeyed. The posture was not one he could keep up for long without losing his balance, but he felt the sudden surge of excitement in the Big Creature and was encouraged.

'Now watch! I shall sit down on the ground. Do you understand what that means? I'm going to sit down.'

The Big Creature folded up in an awkward way; its knees were on the wrong side of its body, but Big Sword recognized the operation. He followed it with a thought of his own.

'I will spread my membranes out.'

The Big Creature's astonishment was a dazzling shock and

he put out a protest. In reply came something which could be an apology. He sharpened his thoughts and put out the next one with all the clearness at his command.

'We have proved that we can make contact. Now we have to practise thinking to and fro until we understand clearly.'

He had just felt the other's incoherent agreement when the interruption began. Another of the Big Creatures came lumbering between the trees.

'Ricky! Scatter my stuffing, what are you doing here? You'll be in the doghouse for sure. Do you want Barney's little black devils to carry you away?'

Ricky scrambled to his feet in alarm.

'Sorry, Dr Woodman, I forgot. I was . . . looking at things and I came in here without thinking. I'm awfully sorry.'

'No harm done. Come out before we have any more alarms and excursions.'

Big Sword felt an impulse of despair from the Big Creature which he had at last succeeded in taming; it seemed to regret this interruption even more than he did. It was anxious that the second Big Creature should not see him, so he remained still, one dark shape among many and effectively invisible; but he sent a thought after the tame one: 'Come again! I will be on the edge of the clearing. Come again!' and was nearly knocked over by the energy of its reply.

Woodman marched Ricky firmly out of the forest.

'Now you're here you may as well be useful. I want to go up to my pet pool and I can't find a chaperone. If I've timed it rightly, we should find something interesting up there.'

Ricky summoned up a show of polite interest. Normally he would have been delighted.

'Is it the pseudohydras again?'

'That's right. Remember when we saw them catching those things like two-tailed torpedoes?'

'Yes, but you said all the ones in the pool had been eaten now.'

'They have. Here we are. Don't lean over like that – they won't like your shadow. Lie down. So!'

Ricky lay on his belly and stared down into the transparent water. Except where it was shadowed it reflected the brilliant blue of the sky; the only thing on Lambda that had a familiar colour. He felt, suddenly, stirrings of homesickness, but they vanished quickly. Homesick, when the most wonderful thing possible had just happened? Nonsense!

He concentrated on the pseudohydras. They lived just where the pool overflowed into a small brown stream. Each consisted mainly of a network of branching white threads, up to six inches long, issuing from a small blobby body anchored on the stones. There were perhaps fifty of them, and together their tentacles made a net across the mouth of the stream which nothing larger than a wheat-grain could escape. The sluggish waters of the stream must all pass through this living mesh, carrying anything unlucky enough to swim out of the pool; the tentacles were immensely sticky and could hold struggling creatures several times the size of the pseudohydra's own body, until the flesh of the tentacles had flowed slowly around them and enclosed them in a capsule whose walls slowly digested them away.

'See there?' whispered Woodman.

Here and there one of the tentacles ended in a transparent, hard-edged blob. Small dark cigar-shaped objects jerked uneasily within it, perhaps a dozen in each little case.

'It's caught some more torpedoes!' whispered Ricky. 'Little tiny ones this time.'

'Not caught,' answered Woodman. 'I thought they'd be ripe today! Watch that one – it's nearly ready to split.'

A few minutes later the capsule indicated did split. The tiny torpedo shapes, three or four millimetres long, spilled out into the water. They hovered uncertainly, veering here and there under the uneven propulsion of the water-jets emerging from the two-pronged hind end. Ricky gasped.

'It's let them go! And look – there's one rubbing against a tentacle and not getting caught. What's happened?'

Two of the little torpedo shapes came together. They jerked uncertainly round each other, then swivelled to lie parallel. They moved off together.

Others were paired already. One pair separated as Ricky

watched them. The two little torpedoes shot off crazily. One came right under his eyes and he saw that it was emitting a faint milky stream.

Woodman's hand came down, holding a pipette. The torpedo veered off. Woodman sucked up a drop of water and held out the pipette.

'There,' he said softly. Tiny specks, barely visible, floated in the drop.

'Eggs,' said Woodman.

'Eggs! But – these are babies. The other ones were much bigger.'

'So they were, Ricky. Do you know what these are going to hatch into? More torpedoes? Not on your life! Unless there's something else crazy about the life cycle, these will hatch into little pseudohydras.'

Ricky rolled over to stare at him. 'But what are the big torpedoes, then?'

'This is how I see it. You know about the reproductive cycles in Coelenterates, back on Earth? Especially hydroids like Obelia and so on? The sessile ones reproduce by budding for a while. Then they start to produce buds which don't turn out like the parents. Those break off and go swimming away on their own. They feed and get big and in the end they produce eggs or sperm, and the fertilized eggs produce a new sessile generation. Well, here the free-living forms – the torpedoes – are ready to lay eggs as soon as they're released. They mate a few minutes after hatching and lay eggs as soon as they're fertilized. But after that they aren't finished. They go swimming around the pool and feed and get fat. And when they're full grown, they come swimming back to the old pseudohydras, and the pseudohydras eat them and use the food to produce a whole new crop of little torpedoes. Get it?'

Ricky scowled. 'What a disgusting animal.'

'Nonsense! It's a beautiful piece of natural economy. Don't be a snob, Ricky. Just because no terrestrial organism evolved this way you think it's unethical. Some Earth creatures beat pseudohydra hollow for nastiness – think of some of the parasites. Think of the barnacles, degenerate male parasitic on the

female. There just aren't any ethics in evolution except that the species shall survive, if you call that an ethic.'

Ricky looked at him doubtfully. 'We've evolved. And we bother about other species, too.'

Woodman nodded. 'We try to – some of us. But our survival has meant that a good many other species didn't.'

Something else occurred to Ricky. 'This sort of whatsit – alternate generations – has evolved lots of times on Earth, hasn't it?'

'Sure. Dozens of different lines evolved it independently, not to mention all the Lambdan forms that have it, and a few on Arcturus III, and some on Roche's – it's one of the basic dodges, apparently. One stage makes the most of the status quo and the other acts as an insurance against possible changes. Once a well-balanced set of hereditary characters has appeared it can repeat itself fast by asexual reproduction, without the disorganization of chromosome reassortment and so on. On the other hand, should conditions change, a sexually produced population has a much better chance of showing up a few adaptable forms. Some lines of life have dropped the sexual stage, just as some have dropped the asexual, but it probably doesn't pay in the long run.'

'How does a stage get dropped?'

Woodman considered. 'I suppose the first stage might go like this: one single asexual stage – one of these pseudohydras, for instance – happens to get isolated. Say all the rest in the pool die off. It can produce its little torpedoes, but there are no mates for them. The pseudohydra goes on reproducing asexually – you've seen how they split down the middle – and in the end a mutant form occurs which doesn't waste its substance producing useless torpedoes and that breeds faster than the others and in the end replaces them. That's just one way it could happen. In one of the African lakes there used to be annual swarms of jellyfish, all male. One single asexual stage must have got trapped in that lake, God knows how long ago, and it went on producing those useless male jellyfish century after century, while asexual reproduction kept the species going.'

'What happened to it?'

Woodman scowled. 'Silly fools polluted the lake with industrial waste and the jellyfish died out. Come on, it's time for lunch.'

Ellen Scott put away the last of her soil samples and scowled thoughtfully at her apparatus. Tensions in the camp were mounting and everyone was snapping at everybody else. One party had decided that Barney's adventure was somehow due to Ricky, and wanted to call off the precautions that hindered their work. The other stuck to it that Ricky could not have organized it and that precautions were still necessary. Anyway, who in the other party was prepared to tell Doc that there was no danger in the forest except for his son?

Ellen told herself that she was neutral. She didn't know whether or not Ricky was behind their troubles and didn't much care, if only he would leave off tearing his father's nerves to pieces. She had heard a little gossip about him on Earth after it had been announced that he was to join the expedition, and though she had discounted it at the time, after the business of Cartwright's report she was inclined to believe it.

People whose work lay in space had no business with marriage and children. She had decided that for herself years ago. You could run planetary research properly, or you could run a family properly. Not both. Children were part of life on Earth; the settled pattern of security, with which she had grown so bored, was necessary to them. When they were older, perhaps – Ricky had seemed perfectly happy at first.

But what on Lambda was the matter with him now? He'd been going around in a dream ever since the night of Barney's adventure. Starting suddenly to talk to himself, breaking off with equal suddenness and an air of annoyance. He didn't seem now to be particularly worried by the suspicions floating around the camp, although he seemed the sort of sensitive boy to be desperately upset by them. In fact, over that affair with Cartwright he had been upset, and this affair was worse.

And Jordan was obviously heading for a nervous breakdown if this went on much longer.

Ricky, lying in his cabin and theoretically taking his after-

noon rest – imposed because of Lambda's longer day – had come to the conclusion that it was time to tell his father about his Research. Despite his absorption in his overwhelming new interest, he was vaguely aware that the grown-ups were getting bothered. For another he could now 'talk' fluently with Big Sword and haltingly with the rest of the People; he knew what they wanted and there was no excuse for delaying any longer. Besides, the results of Research were not meant to be kept to oneself, they were meant to be free to everyone.

He allowed himself to think for a moment about the possibilities of his newly discovered power. Of course, people had been messing about with telepathy for centuries, but they had never got anywhere much. Perhaps only a fully developed telepath, coming of a race to which telepathy was the sole method of communication, could teach a human being how to control and strengthen his wayward and uncertain powers. Or perhaps, thought Ricky, the people who were really capable of learning the trick got into so much trouble before they could control it that they all simply shut it off as hard as they could, so that the only ones who tried to develop it were those in whom it never became strong enough to do anything useful. He himself had now, at last, learned how to shut off his awareness of other minds; it was the first necessity for clear reception that one should be able to deafen oneself to all minds except one. It occurred to him that he'd better make that point clear straight off: that he was not going to eavesdrop on anyone else's thoughts. Never again.

But obviously the thing had terrific potentialities for research, not only into the difficult and thorny problem of the connection between mind and matter, or into contact with alien races. Why, he could probably find out what really went on in the minds of terrestrial animals, those that had minds; and he could find out what it was that people experienced in a Mass-Time field, which they could never properly remember afterwards, and – oh, all sorts of things!

Ricky got up from his bunk. His father ought to be free at this moment; it was the one time of day he kept to himself, unless an emergency happened. Quite unconsciously, Ricky opened

his mind to thoughts from that direction, to see whether it was a good time to visit his father's cabin.

The violence of the thought he received nearly knocked him over. What on Lambda was stirring old Doc J. up to such an extent? And – bother, he was talking to somebody – Woodman, apparently. Ricky, unlike Big Sword, could still pick up thought at the moment when it drained into the level of speech, but even for him it was highly indistinct. He strained, trying to catch the cause of all this commotion. Woodman had found something – something unpleasant – something—

Ricky dashed out of the cabin door and crossed the half-dozen yards that separated his hut from his father's. Just outside the voices were clearly distinct; Woodman was speaking excitedly and loudly.

'It was absolutely devilish! Oh, I suppose it was physical – some sort of miasma – in fact it nearly knocked me down, but it felt just exactly as though somebody were standing and hating me a few yards off. Like that feeling you get after space 'flu, as though nobody loves you, only this was magnified about a million times – the most powerful depressant ever, and absolutely in the open air, too.'

'Where was this?'

'The eighth sector – just about here.'

He was evidently pointing to a map. Cold with apprehension, Ricky deliberately tried to probe into his father's mind, to see just what they were looking at. The picture was fuzzy and danced about, but he could see the pointer Jordan was using – the ivory stylus he always carried, and – yes, that was the clearing in the forest that housed the Tree itself! The guards about it had been all too successful in their efforts to keep intruders away.

Jordan laughed harshly. 'Do you remember that we scheduled this planet as safe?' He got to his feet. 'First Barney encounters devils and now you've discovered the Upas Tree. You're sure this gas or whatever it is came from the plants?'

'I'm certain it was this one particular tree. It's by itself in the middle of an open space. The feeling began when I was six feet from it. It has big pods – they may secrete the toxic –

I collected a branch once before and didn't feel anything. Perhaps it's seasonal.'

'Well, it'll have to come down.' Ricky, horrified, felt his father's savage satisfaction at coming across an enemy he could deal with. 'Ellen wants to push her soil examinations out in that direction – it's the only sector we haven't covered yet and a good many people want to work there.'

Ricky, horrified, straightened from his crouching position under the window and appeared like a jack-in-the-box over the sill.

'You mustn't, Doc! Honestly you mustn't. That Tree's terribly important. It's only—'

'Ricky!' Jordan lunged to his feet, scattering objects across his desk. 'Were you listening to my conversation?'

Ricky turned white. 'Yes, I was, but—'

'Go to your cabin.'

Woodman made a move to intervene, but Jordan brushed it aside.

'I'll speak to you later. For the moment, you'll go to your cabin and stay there. until I have time to deal with you.'

Woodman thought that Ricky was about to make some further protest, but after a moment's tension he turned and bolted.

Jordan picked up the stylus with a trembling hand.

'I'll come with you and investigate this thing at once, Woodman. We'll need masks and an air-sampler, and we may as well take one of those portable detection kits. Can you draw them from the store, please, and be ready in ten minutes. Get a blaster, too.'

Woodman thought of arguments and decided against them. Old Jordan had been stewing up for something like this for the last week and it was probably better to let him get it out of his system. When it came to the point Jordan wouldn't start destroying things without careful consideration; he was too good a scientist for that. Woodman didn't know why Ricky was so concerned, but he himself would take good care that a possibly unique specimen wasn't damaged in a hurry. He went for the equipment.

Jordan hesitated at the entrance to Ricky's cabin. He heard a

slight movement within, and moved on. He was still trembling with a fury that he only half understood, and knew that he was in no state to conduct a delicate interview, or even to think straight. Better leave the boy alone until he had got things sorted out in his own mind.

Ricky, lying tense on his bunk, 'listened' with all his power. Old Woodman didn't really approve of this expedition, made in such a hurry. Good. Doc J. was half aware that his own brain wasn't working straight. Good again. Ricky spared a moment to wish that he had given more thought to his father during the last week, but it was too late for that now. Even if Jordan didn't take a blaster to the Tree straight off the People were still perched on the thin edge of disaster. For the first time since he had understood what Big Sword wanted him to do, Ricky began to doubt whether it could be done. Were people going to listen to him? Were Doc J. and Woodman and Miss Ellen and the rest of them really any different from Cora and Camillo and all the other people on Earth who didn't even try to understand?

No, there was only one way to make the People safe – if it would work. And he'd *got* to take it. Because this was his own fault for not telling Doc J. sooner. He'd acted like a silly kid, wanting to keep his secret to himself just a little longer. Well, now he was going to put things right, if he could – righter than they were before. With any luck it would be hours before anyone missed him. He might even be able to do what he wanted and call back on his transmitter to explain before they found that he had gone.

Ricky was already out of the clearing before Jordan, who had started out with Woodman, turned back to speak to Dr Scott.

'Ellen, I've left Ricky in his cabin. We had a . . . disagreement. I think he's better left to himself just now, but would you mind going to his cabin in an hour or so, to see that he's all right?'

'Of course, John. But what—?'

'No time now. I'll explain later. Thank you, Ellen. Goodbye.'

There was no undergrowth in the forest but the branches were extremely thick, and the darkness beneath them almost

complete. Jordan, following Woodman through the trees and the slow pace enforced by these conditions, felt his anger drain away and a deep depression take its place. What sort of showing had he made, either as a father or as the head of the expedition? This particular episode was quite idiotic. There was nothing in Woodman's report to call for this immediate dash into the forest. He should at least have stopped to find out what Ricky knew about it – and now that he was cooling off, Ricky's anxiety seemed more and more puzzling. If it weren't that to turn back would make him look even more of a fool than he did already, he would have given up and gone to find out what the boy knew.

In front of him Woodman came to a halt.

'That's it, sir! That's the Tree! But – there's no feeling about it now.'

Jordan brushed past him.

'Stay here. Be ready to put your mask on.' He walked slowly forward until he was right under the branches of the Tree.

On either side of the clearing, sitting in the treetops, the Guardians consulted anxiously.

'The Contact said we must not drive them away. We must do as he suggested.'

Jordan looked up at the branches and dared them to depress him.

'I don't feel anything,' he said at last. 'Woodman, are you certain this is the right tree?'

'Well, I was, sir.' Woodman approached it in growing doubt. 'All these little clearings are so much alike, I could have – no, it is the right one! I tied my handkerchief to this branch for a marker, before I bolted. Here it is.'

The Guardians gave the telepathic equivalent of a sigh and started on the next line of defence.

'You know, sir—' Woodman was carefully deferential, 'I've never seen another specimen like this. After all, this little bit of the Forest is pretty well cut off – the Rift on one side, the Mountains on the other, and the River in the south. This type of soil doesn't even extend as far as the River. You might get forms here which were unique – relics, or species evolved

since the Rift opened. I don't feel we ought to destroy it without very good reason.'

Jordan scowled up at the nearest pod.

'I wasn't proposing to destroy it here and now! If the thing is a potential menace we must find out about it, that's all. I must say I don't . . . what's that?'

The sound of snapping twigs could be heard back along the path. Woodman started down it with Jordan at his heels; it was so dark that he was almost on top of Dr Scott before he saw her.

'John! Thank goodness. Listen, you've got to come back at once. It's . . . it's Ricky. He's gone. I went to his cabin like you said, and he wasn't there. He isn't anywhere in camp. He's gone.'

There was a flurry in the camp, but it was an organized flurry. Jordan, white and sick-looking, nevertheless had himself well under control. Important facts were sorted out quickly.

Three parties working on the east side of the clearing could swear that Ricky had not passed them.

Various delicate gadgets which responded violently to the movement of humans anywhere near them were rigged in the wood to the north, which was taboo in consequence. They showed no sign of disturbance.

That left the south and the west. South was a stretch of about eight miles of forest, unbroken until it reached the big river. West was about half a mile of forest, fairly well explored, and then the Great Rift.

'There'd be no sense in going that way,' Jordan laid a pointer on the map to indicate the Rift; he noticed in a detached way that his hand was quite steady. 'It doesn't lead anywhere. There's just one place he could be making for, if we assume him to have an intelligible plan, and that is the First Base on the coast. The one way he could possibly get there would be to get to the river and float down it on one of the log-rafts – we saw plenty of them coming down while we were at the base.'

'But the rapids—' said somebody.

'Has anyone reason to suppose that Ricky knew about the

rapids?' Beads of sweat stood out on Jordan's forehead. No one answered. 'We have to find him before he gets there. Unless any of you can suggest another way he might be trying to go.'

Nobody cared to suggest that Ricky, if he had flung off in blind panic, might be headed nowhere in particular under the shade of the black trees. On the south side the paths went only for half a mile or so, and if he left them he could be lost within a hundred yards of the camp. They had already tried to pick up the tracker he was supposed to carry, but he had evidently switched it off or thrown it away.

The geologist, Penn, spoke suddenly from the back of the group.

'How about the Rift? It interested him. He might try to get across.'

'That's possible,' said Jordan. 'On the Rift he'd be relatively easy to spot. That's why I propose to leave it till later. We have only one heliflier. If he's gone through the forest to the river we have to catch him at once. He's been gone two and a half hours. If he went straight to the nearest point of the river he might be there by now. The heliflier's the only chance. I can patrol the whole stretch and spot him as soon as he comes to it. If he hasn't reached it by dawn, I'll go back and fly over the Rift. If he does happen to be there, he won't take much harm in that time.'

'There are two helifliers,' someone suggested.

'No,' said Jordan sharply. 'The other is unsafe.'

Not all the party were to join the hunt at once.

'There are only a few profitable lines,' said Jordan. 'We don't want everybody exhausted at the same time. This may be more than one day's search. And some of you have long-term observations to continue.' He raised his hand, stilling a protest. 'If to take all of you would increase the . . . the speed with which we are likely to find Ricky by one per cent, or half that, I'd take you all. But I won't ruin several months' work for nothing.'

In the end several parties set out through the trees south and one went west. Jordan had already taken the one serviceable heliflier and departed. They had arranged an automatic

sound-signal to go off every half hour in the clearing, in case Ricky was lost and trying to find his way back, and there were flares and a searchlight for when it became dark.

Ellen Scott had been left behind as part of the 'reinforcements.' She managed to catch Woodman before his party left.

'You used the second heliflier, didn't you? What's wrong with it?'

Woodman grimaced. 'It failed to co-operate over landing. I got down intact by the skin of my incisors and had to walk home – we fetched it finally on the truck. I found a rough patch on one of the power planes and cleaned it up. That may or may not have been the cause of the trouble. We haven't got checking equipment here and nobody's tried it out the hard way. Leave it alone, Ellen. When those things are good they're very very good. Once they act up – leave them alone. It wouldn't be any use over the Forest and Doc J. won't miss anything on the River.'

'How about the Rift?'

'Why should he go there? He was upset but he wasn't crazy. No, he must have set out for the base camp – probably thinks he'll be treated as a hero if he gets there. I'll give him heroics next time we meet.'

Ellen was occupied for the next hour with various laboratory jobs to be done for members of the search party. Reports came in every few minutes over the radio, but they were all negative. The ground was hard dry. If Ricky had stuck to the broken trails, he would leave no sign. Even off them, he was small enough to walk under the trees where a grown man would have had to push his way through. There were three chances: to see him from the air, to get a fix on his radio, and to come upon him among the trees. And however systematic the searchers were they knew perfectly well that they could only do that by chance.

Unless one could guess where he had gone. Jordan thought he had guessed.

Ellen prowled restlessly about. What would Ricky have done? Nothing had been taken from his room; had he set out without any equipment at all?

She went to the kitchen. Barney was muddling around among his store-cupboards, in a very bad mood. He had wanted to go with the search parties and had been turned down.

'Barney,' said Ellen quickly, 'did Ricky take any food?'

'That's what I'm trying to check, Miss. There's some biscuits gone, I think. He could have taken them, or it could have been anyone this afternoon. And I think one of the big canteens has gone, but I suppose a search party took it.'

'They didn't,' said Ellen sharply. 'There are always plenty of streams, apart from the pools in the leaves. They only took small water bottles.'

'One of the big canteens has gone,' repeated Barney obstinately. 'And one of the water bottles isn't, if you take my meaning – Ricky did not take one of those, I mean, I've accounted for them. The canteen I can't account for. But Ricky wouldn't lumber himself up with that,' he added morosely. 'He couldn't carry it if it was more than half full, and he knows about the streams as well as anybody. No, I reckon someone pinched it for a collecting tin or something. That's how it goes in this place, and now we can see what comes of it. You can't keep a proper check on anything—'

But Dr Scott had gone.

She waited, fuming, until the party which had gone west came back.

'Yes, we looked over the Rift all right,' said the leader morosely. 'Hell, Ellen, the whole place is a heat-trap. With the haze and flickers visibility is about twenty yards. Even from the air you wouldn't see anything, unless maybe when the shadows get longer and before they get too long. Jordan wouldn't see anything if he did fly over it now. Besides, why should the kid have gone into that oven?'

Ellen turned away. Why should Ricky have gone that way? But why should he have taken a big canteen, unless he was going to cross a waterless area? If he had taken it, of course. But there were plenty of containers in the stores for scientific work.

Ricky had been interested in the Rift, certainly. He had been asking questions about it yesterday – one of the few times lately he had shown interest in anything at all.

But visibility in the Rift was bad now. When the shadows were longer—

Jordan called over the radio. He had been flying up and down the river and the adjacent forest for the last hour and a half. Ricky had been gone about four hours.

There were three hours of daylight left.

Two hours later the situation was unchanged. To the parties in the forest night would make little difference; they were using lights already. Jordan proposed to stay in the air – one or other of the moons would be in the sky most of the night. There was about one hour of daylight left.

Ellen Scott listened to his report, and those of the search parties. Then she went briskly to the place where the one remaining heliflier was parked. She found another member of the expedition contemplating it gloomily.

'Come away from there, Phil,' she said severely.

'Oh, hell, Ellen, there's a seventy-five per cent chance the thing's all right. Woodman said he'd fixed up a rough plane, didn't he?' The man turned away nevertheless. 'What in Space did Jordan want to bring that kid here for?'

Ten minutes later he shot out of his cabin, where he had been dispiritedly collecting together the makings of a drink, in time to see the heliflier rise gently into the air and disappear towards the west.

Although the shadows were beginning to lengthen, the Rift was like a furnace. The water in the canteen was hot. Ricky and Big Sword sat in the slightly cooler earth on the north of a boulder and contemplated the forest lying away to the left – not the forest they knew, but the strange trees of the farther side.

Big Sword's goggle eyes did not register emotion, but Ricky could feel the stir of curiosity in him. Big Sword was already reaching out to new streams, new treetops, new bare places that would be warm in the sun. For himself Ricky could only think about the two miles remaining to be walked.

He had hopelessly underestimated the time it would take him to pick his way through eight miles of boulders, too hot for the hand, walking on sliding shingle; he had managed less

than two miles an hour. But now he had to get on. He stirred himself, got Big Sword perched again on his shoulder and re-strapped the canteen, lighter now but still a burden.

He had gone perhaps a dozen strides when the shadow of the heliflier came up behind and settled over his head.

Ricky started to run. There was no sense to it, and Big Sword disliked the effects, but he ran just the same, with the water sloshing about on his back. The shadow of the flier slid forward a hundred yards and it began to come down over a comparatively level place. Ricky swerved sideways. He heard a shout echo among the boulders, but the echo of combined relief and exasperation in his mind rang louder.

'Ricky! Stop and talk! Whatever it is, I'll help. There's no sense in running. If I get in touch with your father, there'll be another flier and several people here in twenty minutes. Stop! Listen to me, will you, you—'

The shouts echoed on for a moment, but the thought had stopped.

Dr Scott came whirling up through hot red mists to find herself lying beside a fire. A very hot fire, in a stone fireplace. It didn't make sense. Warm water was being sloshed across her face and there was a murmur of voices – two of them.

'She hit her head. That's all. She fainted. She'll come round in a minute. Then you'll hear her. It isn't sleep, no – not exactly. What's the matter? Why don't you—'

The second voice was no more than a vague murmur of curiosity; it was beginning to sound irritated as well.

Ellen remembered that she had been running among a lot of boulders and had twisted her foot. No doubt she had hit her head when she fell; certainly it ached. But what had she been doing that for?

She opened her eyes.

Ricky's anxious face hung directly above her and he was pouring water from his cupped hand on to her forehead. Beside him was—

Ellen winced and shut her eyes.

'Dr Scott. Please!' Ricky sounded worried. 'Are you hurt?'

'Delirious, I think,' said Ellen faintly. She opened her eyes again. 'Where did it go?'

Ricky's face was a study in doubt and other emotions. Ellen put a hand to the aching spot of the back of her head and began very cautiously to sit up.

'Come on, Ricky,' she said firmly. 'Who were you talking to?'

'Aloud?' said Ricky, in tones of surprise. 'Oh, so that's why he couldn't hear.'

Ellen shut her eyes again. 'I'm the one with concussion, not you,' she pointed out. 'Who couldn't hear?'

'Well, his *name*'s Big Sword,' said Ricky doubtfully. 'More or less, that is. He says he's coming back, anyway.'

Ellen opened her eyes once more. They focused on the region of Ricky's right ear. Laid gently over it was a skinny black hand with four long, many-jointed fingers. A slender arm stole into view, attached to what might have been a medium-sized potato that had happened to grow black. On top of this was perched a head about the size of a large egg. The greater part of this was occupied by two large light-grey eyes with slit pupils and dully shining surfaces. They goggled at her solemnly.

Once again she was aware of a vague murmur of curiosity, not divisible into words.

Ellen drew a deep breath. 'Ricky, this . . . this friend of yours. Why did you bring him here?'

Ricky studied her face earnestly. 'It was my idea, not his, Dr Scott. I wanted to get to the forest over there. To the other side of the Rift.'

'But why?'

Ricky shook his head.

'It wasn't that at all. It was my idea, I tell you, not Big Sword's. He didn't . . . didn't hypnotize me. He wouldn't have done it to Barney except that he couldn't think of anything else to do. And I've absolutely got to get there now!'

Ellen sat up and stared at him. 'All right, Ricky. Listen, you tell me the reason. If it's a good one . . . well, I must let your father know you're safe. But I won't tell him where you are. I'll fly you to the forest, and then back. How about that?'

Ricky breathed a sigh of relief. 'Yes,' he said. 'Is Doc J. very worried?'

'Worried? Listen, make it quick. I'm going to call him in ten minutes, whatever. What are you doing here?'

Ricky sighed and closed his eyes for a moment. 'The idea began with the jellyfish, really,' he said. 'The male jellyfish in the lake.'

The heliflier had completed the fifth sweep down the river to the sea; back up the river to the rapids, where many rafts of floating vegetation broke up and re-formed, making Jordan's heart jump as he hovered above them; on up the river to the point he had fixed as farthest east. It was no good to fly over the forest; he had found that he could not pick up the search parties when he knew they were directly below him. The river was his only hope.

Nearly time to make another report. His hand was on the button of the radio when the speaker came suddenly to life.

'Calling all search parties. John Jordan please answer. Can you hear?'

Jordan's voice came out as a harsh croak. 'I hear. Is he—'

'Ricky's safe. He's with me now. Turn everyone home. But – listen. He had a good reason for going off as he did. He had something to do and it's not finished. So I'm not going to tell you where we are.'

Jordan shouted something incoherent, but her voice over-rode him.

'It's important, John. I don't know if it will come off, but he must have a chance to try. You can probably find out where we are, but – don't come. Do you understand?'

'Ellen, is he really all right? And are you?'

'Sure I'm all right. We're going to remain all right. We'll be back some time next morning. Oh, and Ricky says' – her voice broke off for a moment – 'Ricky says he is very sorry to have worried you, honestly he is, but it was urgent, and will you please not do anything to damage that Tree.' There was a moment's silence. 'John? You haven't done something to it already?'

'I haven't, no.'
'Don't let anyone touch it. Good night, John. Sleep well.'
'Ellen—'
The speaker clicked and was silent.

The helifliers were designed for sleeping in, in an emergency but they were not air-conditioned. Ellen felt the compress on her head, which had long ceased to be cold, and envied bitterly Ricky's ability to sleep under these conditions. A faint gleam of light from button-sized surfaces a couple of yards off showed that Big Sword was still sitting and watching as he had been doing ever since they lay down. Ellen wished bitterly that she had had the sense to lie beside the refrigerator so that she could get more cold water without having to lift her aching head.

The grey buttons moved. She felt small, strong fingers tugging gently at the compress. She lifted the pressure of her head and felt it go. There was a sound of faint movement and the click of the refrigerator door, with a momentary blast of lovely cold air. A few minutes later the compress, beautifully cold now, was poked carefully back under her head. She felt the thistledown touch of skinny fingers against her cheek.

'Thank you,' she murmured, and then, remembering, she repeated it inside her head, 'Thank you, Big Sword.'

They had flown at dawn and the heliflier sat among the boulders at the foot of the cliff. Ellen and Ricky sat beside it, shivering a little in the morning cold, and waited.

Ellen looked at Ricky's intent face. He could not hear strange members of the People distinctly, she had gathered, but he could usually detect their presence.

'What does it feel like?' she asked abruptly.

'Hearing thoughts?' Ricky considered. 'It feels like thinking. You can't really tell other thoughts from your own – unless they've been specially directed. That's what made it all so very difficult.'

'I see,' Ellen sighed. What on Earth, or of it, could Ricky's future be? True telepaths would not fit in Earth's scheme of things.

'I used to pick up thoughts all the time,' Ricky went on. 'I didn't know that until I found out how to shut them off. It was a sort of fuzzy background to my thinking. Do you know, I think all real good thinkers must be people with no telepathy, or else they learn to shut it right off. Now I can do that I think much clearer.'

'So you don't overhear thoughts accidentally now?' Ellen felt encouraged.

'No, I don't. I only get directed thoughts. I'm not going to overhear anyone ever again, it's just a nuisance.'

'Stick to that. I don't think uncontrolled telepathy is much good to a human being.'

'It isn't. I tell you what, I think there are two ways of evolving communication, telepathy and communication between senses, and people who are good at the one aren't good at the other. I'll never be a real good communicator like the People, my mind doesn't work the right way. But I'll be good enough to be useful for research. I'm going to—' Ricky broke off, seized his companion's arm and pointed.

Ellen looked up at the cliff. It was about thirty feet high, here, with only a couple of six-inch ledges to break the sheer drop. Black foliage overhung it in places.

'There!' whispered Ricky. Slowly there came into view a black head the size of an egg – a black head in which eyes shone grey.

'Is he coming back?' whispered Ellen. 'Has he given up, then?'

There was a faint rustling among the leaves. Ricky's grip tightened painfully on her arm.

A second black head appeared beside the first.

'You see,' said Ricky anxiously, 'I didn't really think you'd go and destroy the Tree straight off, but I couldn't be sure. And everyone was angry with me about one thing or another and I didn't know if they'd listen.'

'Speaking for myself,' said Woodman, 'there were one or two moments when if I'd had a blaster handy the Tree would have been done for there and then.'

'So you were just taking out insurance,' said Jordan.

'Yes, because if we found other Trees the species would continue anyway. Big Sword and I meant to ask you to help about that, later – the Journey, I mean – only then I thought we'd better try that straightaway in case I was stopped later. I thought if I could *show* people it was better than telling them.'

'Isn't Big Sword coming?' said another of the party. The whole of the expedition, including even Barney, was seated around a square table raised on trestles in the centre of the clearing. Ricky nodded.

'As soon as we're ready,' he said. 'Now, if you like. But he says if too many people think at him at once it may hurt, so he wants you to be ready to start talking if I give the signal.'

'What about?' said Cartwright.

'Anything. Anything at all. Shall I call him?'

There was half a minute's expectant silence. Then lightly as a grasshopper Big Sword flew over Ellen's head and landed with a slight bounce in the centre of the table.

There was a simultaneous forward movement of heads as everybody bent to look at him, and he sat up and goggled out of pale bulging eyes. Then—

Most of them felt the sharp protest of discomfort before Ricky waved his hand. Nobody had really thought out what to say and there was a moment of silence, then somebody began to talk about the weather, the statistician began on the multiplication table, Jordan found himself muttering, ''Twas brillig, and the slithy toves . . .' – after a minute or so only Ricky was still silent.

'He says, he'll go to one person after another, but the rest keep talking,' reported Ricky presently. 'You can ask him to do things if you like.'

Solemnly Big Sword went round the table, sitting for a few moments in front of each person, snapping out his membranes, revolving to present his back view, and then going on.

'That's him!' said Barney as Big Sword came to a halt in front of him. 'But how did he sting me?'

The spindly hand whipped to Big Sword's flat thigh and flashed back holding a flat grey spike two and a half inches long.

He held it out and Barney fingered the point in a gingerly fashion.

'That's the sword, is it?' murmured Woodman. 'Do they secrete it, Ricky?'

'I think so, but I haven't asked him.'

Woodman breathed out a long sigh.

'This,' he said, 'is the answer to a biologist's prayer.'

Big Sword bounced suddenly back into the middle of the table. 'He's tired,' said Ricky. 'He says he'll send someone else another day.' Ricky yawned uncontrollably as Big Sword took a flying leap off the table and hopped across the clearing. He had had a hard day the day before and a very early start this morning and a lot of excitement since.

'Can we just have the story straight?' said the statistician suddenly. 'The biological story, I mean. You people may have been able to follow it through all the interruptions, but I didn't. I gathered that Ricky had discovered the female of the species, but that's all. How did they get lost?'

'I'll tell it,' said Jordan, looking at Ricky, who was nodding sleepily, 'and Ricky can correct me. Big Sword's People are the active and intelligent offspring of an organism which to all intents and purposes is a large tree. They are produced by an asexual budding process inside pods. When they are a year or so old they are seized by the urge to migrate across the Rift. They never knew why, and probably none of them ever got across. It occurred to Ricky that alternation of generations usually turns out to have sex at the bottom of it. Big Sword's People couldn't reproduce themselves – they simply hatched from the Tree. So Ricky thought that there might be another Tree on the other side of the Rift which produced females. And when I very foolishly considered destroying the Tree because of Woodman's experience, he thought he had to go and find them straight off, so that at least the species would survive. And I'm glad to say he was quite right – they were there.'

'You mean to say,' said Cartwright, 'that the Tree has been producing People for the last fifteen thousand years without a sexual generation at all?'

'Not necessarily,' said Woodman. 'There may have been several on this side of the Rift, at first, and this Tree may be the last offspring of a small population. It must have been an outlier, if so, because the migration was so firmly set for the west.'

'And there's another tree on the far side which produces females?'

'There are two female trees and three that bear males, but two of the male ones are very old and have few offspring, and none of the seeds have been fertile for at least fifty generations. Apparently not many come to full maturity at the best of times, but this outcross may really save the species.'

'And what exactly is the plan?' demanded the statistician. 'To ferry them across? What will they do when we leave?'

'No,' said Jordan. 'We don't propose to interfere more than we have to. The tragedy of the whole process was that the People who took the Journey almost certainly died on the way. Twelve miles in the sun, with no water, was too much for them. We propose to provide a green belt – a black belt rather – along the migration route. Tiven is looking into the possibilities—'

Tiven looked up from his slide rule. 'Easy as π,' he said cheerfully. 'We can make the channel in a week, once we get the digger from First Base, and a cooker for concrete, and there are any number of streams which run down to the Waste and then vanish underground. It's just a question of training one of them in the way it should go, and protecting it from evaporation in the first year or two until the vegetation gets thick enough.'

The conversation flowed on. But Ricky, his head resting on the table, was already asleep.

Jordan stood at the edge of the Rift and looked over the embryo river-valley that Tiven had designed. Seedlings had been planted along the channel, in earth transported for that purpose, and were already taking hold. The revolving sun-cutters designed to protect them at this stage and to stop excessive evaporation gave the whole thing a mechanical air at

present, but they would be done within a year or two; they were designed to go to dust then, so that even if the expedition had to leave they would not be left. There are places for poorly built things!

Two of the People shot down the cliff a little to one side and disappeared into the shade along the channel.

'Are they off on the Journey?' said Ellen Scott.

'I don't think so. They go singly, as a rule. No, I think . . . look there!'

There were four People now at the end of the line of saplings. Two were presumably the ones who had passed a few minutes before; the other two were linked hand in hand and bore across their shoulders a kind of yoke with a long pod dangling from it. The two from the near side of the Forest had taken the hands of the newcomers and were helping them up the cliff.

'This is the result of your soil report, I think,' said Jordan. 'Woodman says that one reason for the lack of germination on the other side is the exhaustion of the few pockets of suitable soil. I wonder whether it was the necessity of finding the right soil, as well as of looking after the seedling, that led them to develop intelligence?'

The two newcomers had reached the top of the cliff. They seemed hardly to notice the helpers, nor did the latter seem to expect it. The burdened couple moved slowly along, pausing every now and then to investigate the soil. They stopped close to Ellen's feet and prodded carefully.

'Not here, little sillies!' she murmured. 'Farther in.'

John smiled. 'They've got plenty of time. One couple planted their pod just under one of Branding's tripods; trying not to step on them drove him nearly crazy. He had to move the whole lot in the end. It takes them weeks sometimes to find a spot that suits them.'

'Continuing the species,' said Ellen thoughtfully. 'I always thought it sounded rather impersonal.'

Jordan nodded. 'The sort of thing you can take or leave,' he agreed. 'I used to think that you could either explore space or you could . . . well, continue the species is as good a way of putting it as any. Not both.'

'I used to think that, too.'

'Once it was true. Things have changed, even in the last few years. More and more people are organizing their lives to spend the greater part of them away from Earth. Soon there's going to be a new generation whose home isn't on Earth at all. Children who haven't been to Terrestrial schools, or played in Terrestrial playrooms, or watched the Terrestrial stereos, or—'

'Suffered the benefits of an advanced civilization?'

'Exactly. How do you feel about it, Ellen? Or . . . that's a shirker's question. Ellen Scott, will you marry me?'

'So as to propagate the species?'

'Blast the species! Will you marry me?'

'What about Ricky?'

'Ricky,' said Jordan, 'has been careful to let me know that he thinks it would be a very suitable match.'

'The devil he has! I thought—'

'No telepathy involved. If everyone else knows I love you, why shouldn't he? Ellen – did I say please, before? Ellen, please, will you marry me?'

There was a silence. Depression settled on Jordan. He had no right to feel so sure of himself. Ellen was ten years younger and had a career to think of. He had made a mess of one marriage already and had a half-grown son. He had taken friendliness for something else and jumped in with both feet much too soon. He had made a fool of himself – probably.

'Well?' he said at last.

Ellen looked up and grinned.

'I was just making sure. I'm not quite certain I could take being married to a telepath – which you are not, my dear. Absolutely not. Of course I'm going to.'

Ricky, with Big Sword on his shoulder, was strolling along a path in the sun. He saw his father and Dr Scott return to the camp arm in arm, and nodded with satisfaction. About time, too. Now perhaps Doc J. would stop mooning around and get on with his work for a change. He'd had Ricky's and Woodman's last report on the biology of the People for two weeks without making the slightest attempt to read it, and it was full of interesting things.

Just for a moment. Ricky wondered what it was like to get all wrapped up in one individual like that. No doubt he'd find out in time. It would have to be somebody interested in real things, of course – not an Earth-bound person like poor Cora.

Meanwhile he was just fourteen and free of the Universe, and he was going to have fun.

Big Sword, from his perch on Ricky's shoulder, noticed the couple with the pod. He saw that this one was fertile, all right – the shoot was beginning to form inside it. One of them was an old friend from this side of the Rift, but it was no good trying to talk to him – his mind would be shut. The whole process of taking the Journey, finding a mate and taking care of one's seedling was still a mystery to Big Sword in the sense that he could not imagine what it felt like. Just now he was not very interested. He had nearly a year in which to find out things, especially things about the Big People who, now they were domesticated, had turned out to be so useful, and he was going to enjoy that and not speculate about the Journey, and what it felt like to take it.

Because, eventually, the call would come to him, too, and he would set off up the new little stream to the other side of the Rift where the trees of the Strangers grew. And then he would know.

COMMENCEMENT NIGHT

by *Richard Ashby*

As HE entered the View Room the lagoon screen showed a coffee-coloured girl with blonde hair to her hips emerging from the sparkling blue water. In one hand she carried the shaft of an iron-hard pemphis wood spear, in the other was her hair stick.

'Hi,' said Ted.

The tech he was relieving started, jerked his attention from the screen. 'Oh, Jepson. You scared me. Hello.'

'What gives with Nea, there?' Ted nodded at the girl on the telescreen, the girl fifty feet above them and a half mile down the island who tossed the broken spear on to the white sand.

'Nea, huh?' The tech gave a resigned sigh. 'They still all look alike to me.'

Ted went to the control console. 'Wait till you've been here a few years, Mike. You'll know their scars, the number of cavities in each set of choppers.' His fingers found the zoomar pot, began to twist up the magnification. 'Nea, thirteen years old, daughter of Le and Beto. Oriental and Negroid ancestry, predominantly.'

Nea's face and shoulders filled the screen. Her strong dripping wet features showed plainly her racial heritage; large, though not unattractive upper lip, arched nostrils, and the incongruous charm of slanted eyes. 'And that blonde hair?' asked Mike as the girl began to wring water from her long tresses.

'Her paternal grandma's contribution. She mated with one of the Chinese. Her colouring skipped her own kids to show up in Nea.'

Mike grunted and began to collect his belongings – jacket, pen, thermos. 'There's nothing much new, I guess. Most of the young ones are out on the reef. There's a big octopus washed in. He's too tired to get back out to sea, evidently. Cut up, maybe, but he's got plenty of poop left. I guess Nea broke her spear on him.' He scribbled his name on the duty log, wrote 6.04 as his off time. 'The mike at point thirteen's gone dead. I noted it down, called maintenance. There's a little ghosting on pick-ups eight and two. Not really bad enough to mention. Aside from that, nothing new. See you.'

''Night.'

For the next few minutes Ted Jepson was busy loading the sight-sound recorders with fresh blanks, checking the turntables, the cutting styluses, all the while keeping an eye on the twenty television screens that made a mosaic of the huge wall across the room from the control board. Then he

dialled Weather. 'Fair and warmer, not much change in temperature. A nice night for romance,' said the boy at the other end.

Radar Sweep had little to report. They'd got a flicker of metal from something fifteen miles north-west, but the Garbage Men had already taken a sub out after it. Yes, they'd have Garbage call him when they heard anything.

The girl at Transient Desk told him in her soft Texas drawl that there was a VIP from UN just in. 'But he's bein' entuhtained by Public Relations, so he probably won't be sobah too long.'

Jepson hoped she was right. If there was anything he detested, it was having politicoes snooping around during his shift. The journalists and visiting scientists were often bad enough, but the UN reps with their cold eyes peeled for 'useless expenditure,' their frequent inability, even, to grasp the great significance of the project, really teed him off.

Sinking into the swivel chair, he turned up the sound level of the lagoon mike and let his worry wash in the sigh and tumble of ocean noises from above. Nea had finished plaiting her hair, and after winding it into a clever bun, secured it with a thrust of her hair stick. Then picking up her broken spear, she trotted up the beach and along the path that led into a dense arbour of Tournefortia trees. As her image faded from the screen, the one next to it picked her up and followed her through the Tacca fields till she dwindled out of sight among the bamboos behind the huts. Another screen caught her as she emerged, and Ted watched her enter the palm-thatched weapons lean-to.

Tapping on the mike that was concealed in a near-by outcropping of 'stones' – reinforced concrete, actually – he listened as she complained to the custodian of spears, a boy of her own age with a crippled right leg. The youngster answered that while she was quite within her rights to be vexed about the spear's breaking, it was possible that she should not have used a weapon designed for fish on an octopus. A large octopus, added the girl in agreement. They joked about the animal's now having a spear tip to fight back with, and Nea selected another weapon.

The entire conversation had lasted almost three seconds, not counting the laughter.

Routine stuff.

Ted looked idly at the other screens; the pleasant activity of the quiet village, lovers lost to themselves in the bamboo groves and in the caves at the base of the island's highest hill, people gathering trapped lobster from the tidal pools, and children playing some mad racing game amongst the litter of coconut husks beneath the palms.

A routine afternoon in heaven, he mused. Eight square miles of heaven for three hundred and twenty-five people, not one of whom could possibly appreciate it.

'Heaven' was thirty-six years old, and had cost millions of dollars, and thus far had presented the world of science with less enlightenment than with headaches and mystery.

As a philologist, Ted Jepson was quite certain the biggest enigma was the strange and splendid language the islanders had already evolved. A flexible, immensely swift communication in which, for example, a noun concept could take on a verb tinge by a slight lilting of the inflection; in which 'limited' absolutes and negatives existed. A language of predominantly external syntax, with almost no basic structural priority, yet one capable of astonishing refinements and references.

He had many times given up attempting to describe it to such lay observers as journalists or philosophers, for to speak of it one was almost forced to converse in it. Eleven universities on five continents had already acknowledged this, and – somewhat sheepishly, for it was, after all, a 'primitive' language – had established special Chairs to teach it.

But specialists in other fields insisted theirs were the puzzles: psychologists, for example, chose up sides and fought pitched battles in learned journals attempting to reconcile the islanders' tough-minded realism with their extreme altruism. Philosophers grew petulant over the islander's zero amount of speculation over their own origin. And musicologists took to drink when faced with what they resignedly termed the 'sophistication' of their quarter-toned love songs and lullabies.

Sometimes Ted Jepson wondered if science's bewilderment

might not, after all, be an absurdly naïve thing. Were they all, himself included, missing the obvious point? Perhaps the islanders simply illustrated a normal development for any group so freed from the weight of a parent culture with its outmoded jumble of mores, language, and legends.

That was, after all, the purpose of the experiment.

In 1968 the Swiss delegate to the United Nations, in a caustic and rather flip vein, had stung the General Assembly with his observation that '... Whereas that gaggle of blunderers, the League of Nations, impudently set out to cure man of the disease called War, we of the UN have evidently deemed it nicer to turn our backs on the disease and treat its symptoms.'

The Western bloc was instantly on its feet, howling for the remark to be retracted. And for the first time in two years, Russia decided to sustain a Western resolution. It was several minutes, in the swirl of high-strung confusion, before the chair managed to recognize the minister from Australia.

'The criticism, while not without its point, is hardly constructive. What,' inquired that man, 'does the spokesman for the Alps propose we do?'

It was the sixty-four buck question, and the answer staggered the world.

Take an uninhabited island, suggested the man from Switzerland. Rid it of its rats and flies and disease germs, and plant it with simple foods. Beneath that island construct quarters for a team of scientists, and equip them with means to see and hear everything that goes on above them. Next, stock the island with forty or fifty infants, retire, and ponder the results. Carefully. For only by determining the nature of the patient, man, could a diagnosis be properly prognosticated and the particular therapies developed.

Any questions?

While jaws were dropping still further, and eyebrows managing to climb higher, the Swiss admitted he was speaking as chairman of a group which included Mexico, the Philippines, Sweden, India, Thailand, New Zealand, and Ireland. The engineering details of the proposal had already been worked out, and a certain island in the Marshall group had tentatively been chosen for UN consideration.

Five hours later, while the storms of controversy were beginning to build in every world capital, a New York public relations firm began planting their releases. At first they were of the 'Well, after all, why not?' tone. A week later they hit the second phase of their campaign, and few people in the civilized world remained in ignorance of such things as how the infants were to be fed until they could forage for themselves. (From the walls of a sterile irradiated cave, manoeuvrable rubber teats would seek out the tiny mouths. And when they could crawl, they would find food had 'dropped' from the bushes and trees that were to overhang a low-walled pen just outside the cave.)

What foods?

Well, milk formulas at first, of course. Then coconuts with their cool sweet fluid, their juicy flesh. The starchy tubers of the Tacca plant – sometimes called Polynesian Arrowroot; very nourishing, tasty, simple to grow. The crunchy golden keys of the native 'screwpine.' Purslane, an excellent green whether cooked or raw. Clams, lobster, fish of all kinds. A panel of gourmets and dieticians found it profitable to assemble before a CBS camera and discuss the delicacies that would be available.

The emphasis was always on *when* the project gets under way, not *if*, and world opinion began to swing into line.

But where would the infants come from?

They were ready for that one, too. On May 10th, 1969, the MC of Mutual's big 'Retire For Life' show announced he had an important surprise. 'Whoopercolossal,' he phrased it. And near the end of the programme, the stage revolved to bring into view thirty couples who stood smiling into the sets of eighty million viewers. They had gathered here from all over the world, America was told, to volunteer their services to the project.

Parents-to-be.

The opposition threw in the sponge.

Contracts were let for the island engineering. Medical teams set about choosing the parents from the volunteering hordes. Psychologists and pædiatricians and cement authorities conclaved with electronics men. Russian and American UN

officials cross-questioned agronomists and radar technicians instead of each other.

And 'Heaven' was ready for occupancy in little over two years.

Its designation on standard marine charts had always been 'Muritok' in the Marshalls, but this seemed hardly satisfactory. An international contest was held, and a Turkish housewife became rich for having been the first to suggest 'Arcadia.' The name didn't stick, however, for the world had been calling it 'The Island' from the beginning, and was quite happy to go on calling it that.

It was quite a production. Radar patrols kept the sea surrounding the island empty of all craft, save for commuting subs. Grapples could be hoisted from other subs to snatch down any foreign objects floating towards the island. The project's technical complement of fifty men and women, more or less, was housed in spacious, well-lighted, well-ventilated quarters beneath the surface. Television eyes scanned the island from every conceivable hiding place – from within boulders, behind coral walls above and below the water, from 'palm stumps' and cliff walls. Except for a few unimportant blind spots, there was no hiding place topside. Nothing dare be sacred. Nothing was.

Forty-five babies were born in a Tokyo hospital within four days of each other, a feat of timing which elicited no small amount of comment, and were flown to the island when the youngest was ten days old.

Twenty boys, twenty-five girls, their parents representative of the finest breeding stock to be found in every major nation.

And the world adopted them from the start.

The weekly TV show transmitted from the island, 'Project Peace,' maintained the highest audience rating ever tabulated. Cautiously edited at first, in deference to the prodigious multiplicity of international taboos, the films showed merely the fat, healthy youngsters cooing and laughing and playing happily in the bright Pacific sunlight. Careful shots, with shadows and branches amending the nakedness, to begin with, but by the time the toddlers were beginning their wide-eyed exploration of the island, people had, for the most, grown quite accustomed

to their undress. Mistakes were made, of course; the hilarious, and now famous episode, in which two eight-year-olds – a Caucasian boy and his little Japanese girl companion – discovered the effects of fermented coconut sap, was poorly received in some quarters.

But on the whole, Earth widened its moral outlook considerably to make room for its beloved castaways.

And the castaways, as if responding to this generous adoration, thrived and multiplied.

The intercom buzzed and Ted flicked it on. 'Jepson,' he said.

'Margate,' came the nasal reply, 'in Transmission. Look, Ted, we're mighty short on next week's show, and I hate to pad it out with any more library stuff. How about getting me a platter of something good?'

'Such as?'

'Oh, you know. Something interesting. New. Some shots of them inventing horses, or biting out doilies with their teeth. You know.'

'Yeah. New.'

'If you like, I'll go topside and stir them up a little. There's a certain redhead with long brown legs—'

'I'll get you something,' Ted interrupted. He clicked off. Did Margate, he wondered sourly, *have* to be so typical? Every new man seemed to go through the same pattern. First, a detached, veddy professional attitude towards the droves of nubile beauties who wandered around topside. Next, with their probationary periods successfully over, they frequently found it necessary to visit the View Room – some of the excuses Jepson had listened to had been dillies. And finally, after becoming more or less blasé about what was so near, yet so far, they began to be obsessed with the temptation to 'go topside and stir them up a little,' as Margate had put it.

That last stage was what nearly got 'em, Ted knew. Even the greybeards on the project, who certainly realized the experiment was predicated entirely on strict non-intervention, occasionally voiced wistful, half-serious desires to have the islanders find a phonograph and an album of blues records, a

flashlight, or an illustrated encyclopedia – anything that would jar them into an interesting reaction.

And there were those others who wanted to go topside once just for the hell of it. Himself, for example. He supposed that's why he'd done it.

Ted decided to get Margate some shots of the octopus kill. Ought to go over well, he figured: good-looking youngsters; the azure, crystal-clear depths of the lagoon; sun setting into a glory of cerise and golden clouds; and the poor squid providing the element of 'danger.' He flicked on two screens from a supplemental bank on the right wall, turned up the corresponding mikes. The room came alive with excited sounds and brilliant colour.

After starting a recorder going and setting up the proper circuits, he backed away from the lively scene with a twist of the zoomar pot and lowered the twin cutting needles down on to the glossy face of the slowly turning blank. Then, with ample time allowed for commentary, he panned in to the splashing mob of kids and settled down to alternate takes, first a high angle shot from the eye concealed in a jutting needle of 'coral,' then with an almost water-level view from full front. The octopus wasn't visible, but there was plenty of inky discharge in the four feet of water to mark its presence.

With the low-level eye, Ted began getting some fine close-ups of faces as the kids ganged up to rush their quarry. From a lass of twelve or so, with Ireland written all over her freckled features, he got fifteen seconds of that ecstatic blend of joy and fear known only to children. From a tall, magnificently built Negro boy, a fierce scowl of determination. And in contrast, the face of a quiet girl, whose unbound hair floated like a soft ebon cloud about her shoulders. Ted panned in as she pursed her lips thoughtfully and closed her eyes, a line of concentration furrowing her brow.

The brunette's private reverie wasn't carrying the episode forward, he realized, and with his finger poised above the alternate 'take' button, he examined other faces in the group.

They were set in similar expressions.

A chill of astonishment swept him as he gazed at the youngsters. Like dripping statues, like sleepers in a dream, they held

their attitudes of rapt, blind attention while ten long seconds came and went.

Fifteen seconds. Then a small blond boy opened his eyes and shuddered as if to free himself from an unpleasant vision. The spear slipped from his fingers as he turned his face slowly up to the darkening sky. 'Sarreeoah ay,' he stated, as if to himself. Then louder he said the phrase, again and again.

Ted puzzled it out to mean roughly '. . . At this spot, we nine, from this spot away in no more time than it takes me to run from the spring to the shore, for there is heaviness and vast heat, down faster and unlike – Pain, otherwise—' While he was speculating over the lad's unwillingness to complete the concept – there had been a definite downward inflection to the root tones that meant refusal to elaborate, rather than inability – the other eight children broke from the spell that had held them.

Abandoning their spears, they turned almost as one, and struck out for the strip of sandy beach a hundred feet away.

And Ted Jepson got his second shock that day. An even nastier one than the first, for the youngsters were not employing their usual frantic dog-paddling. Each swam true and swiftly, with graceful economy of energy: the Australian crawl!

And in the thirty-some seconds it took them to reach the shore, Ted realized his professional career was over. No need, even, for the authorities to get out their scope needles, for the island children had copied his style perfectly – that odd, loose-legged kick that had helped him place second in the 2004 Olympic fifty-metre events.

A correspondence school detective could easily sew up the case.

But as the children dragged themselves across the sand and melted away into the thick foliage of the Tournefortia grove, it occurred to Ted to wonder why they had not shown off their new accomplishment before. It was New Year's Eve he had gone topside, swimming out through the submarine locks and up to an isolated strip of beach. And this was September. Why hadn't they been seen practising the stroke? And why wait to

use it? If they had delayed this long, maybe there was a chance they'd not do it again for a while – for long enough for him to build an alibi, plan a defence.

He'd have to hide the disc, of course. As a scientist the realization gave him a few sharp moral twinges, but as Ted Jepson who had to eat it wasn't so much.

The intercom buzzed as he reached to shut off the recorder. Guiltily, he snatched away his hand and flicked on the box. 'Jepson,' he said.

'Radar,' shouted the other. 'Chavez in Radar. Hey, I'm tracking something in at hundreds of miles an hour, maybe thousands. It looks as if—'

With an impact that shocked the little coral island to its last polyp bud, something smacked into the lagoon and began to roar. The view screens showed nothing but clouds of boiling vapour.

Ted found his voice before the other did. 'You were saying?'

'Yeah! What was that?' The radar man's words were hardly audible above the thunder from the speakers. Ted turned them down. 'I was saying,' went on Radar – a noticeable shake in his voice – 'that whatever it is, was, might hit the island. Where did it land?'

'In the lagoon. Whatever it was it was mighty hot. Water's boiling up there. Did you get pictures of it?'

'Hope so. We started filming the second it pipped. Wanna' wait till they're here?'

Ted told him he would. Taking off the disc of the incriminating Australian crawl exhibition, he slipped it under the duty log and loaded up the recorder again. With both of them going, he began getting shots and sounds of the excited islanders as they hurried from whatever they'd been doing to line the lagoon shore.

'Still there?' asked Radar.

'Sure.'

'Meteorite! Big chunk about the size of a football. Black and kind of knobbly. Got some good pictures,' he said proudly. 'Sell 'em to *Life*, mebby. 'Bye.'

The steam clouds were lifting from the water, and Ted could make out pieces of what he supposed was boiled octopus

floating on the surface. It had been quite a day, he mused wryly.

Taking up a pen, he began to brief the incident for the log, but a face detached itself from his memory and floated down over the page. The face of a small blond boy, his gaze upturned to the sky. And he had said something . . . something oddly important.

Ted tapped the pen thoughtfully against his teeth, and the boy's words came drifting back: '. . . Heaviness and vast heat. Down faster . . . pain . . . from this spot we go—'

Hot and heavy and fast: the meteorite! And the lad had spoken of it at least three minutes before it hit!

Ted laid the pen carefully down on the console and wet his lips. Cautiously, and with nice control, he allowed the impossible fact into his familiar scheme of things. Then he entered the picture and studied it for a place in which the new data might fit.

An hour later he discovered it wouldn't fit at all, but that it had managed to twist the familiar scheme into a beauty of a maze. He gave up and began to stride angrily around in his maze.

The stars burned hotly against the velvet midnight sky when he broke surface.

For long minutes he rested, floating, filling his aching lungs again and again with the rich salty air, and letting the ground swells carry him closer to the breaker line. When a comber finally humped itself beneath him, he began swimming it, lashing the luminous plankton into a frail pinkish glow like the one marking the shore. Suddenly he was with it, sliding down the long black slope, then fighting for air in the churning white thunder when the wave broke.

Wearily, Ted dragged himself up from the backrush and on to the narrow shelf of beach. In the bright starlight it looked just as it had that New Year's Eve; three or four-hundred square feet of sand, bounded on three sides by sheer, overhanging rock walls, and on the fourth by the restless Pacific.

A blind spot. Inaccessible except from the ocean, and under water at high tide. Not worth a mike and an eye.

There were five other blind spots on the island.

One of them had to have a lot of answers hidden in it, or Dr Ted Jepson would rapidly become the world's most unpopular man.

He leaned against the cliff and rested. Water trickled from the pockets of his shorts. It was a forlorn gamble, he supposed, but what else could he do? Such an important discovery as an apparent precognitive ability in those nine island children had to be studied. It was not in him to keep silent about it. But to demonstrate their wild talent would also be to show them swimming like a certain ex-Olympic champ. And he would have to tell of getting drunk at the techs' New Year's brawl, and feeling an almighty desire for a swim; of sneaking out through the submarine tunnel – no mean feat! – and up through twenty-five feet of surging ocean to this isolated beach. Scared sober by then and dreading the even more dangerous return trip, he had nevertheless put in an hour of long-wanted exercise.

And he had obviously been observed.

Choosing the least precipitous cliff, Ted began the climb, searching by touch for handholds on the spray-wet rock, pulling himself slowly upward by sheer strength. It took him a quarter of an hour to make the ascent.

With scratched and bleeding fingers, he dragged himself over the lip of the cliff and peered down at the island beyond. The first non-islander on the spot in thirty-six years.

It was a dubious honour, he reflected dourly – like being the first man to paint a goatee on the Mona Lisa.

Shedding himself of his sandals and muddy shorts, he ditched them in some bushes and set off naked down the hill. With his dark lamp-tan and sinewy build there was a fair chance of his being taken for an islander if spotted by some over-alert tech. Knowing the location of the eyes and mikes gave him better odds, he hoped, and the man on night duty in the View Room usually kept on only those screens that showed the village and its near-by paths. Not that he'd be any worse off if spotted.

Of course, he mused dryly, picking his way through a heavy stand of coconut palms, he could always *stay* topside. It was unlikely that they'd send a posse after him. He could hole up

in one of the blind spots and maybe become a sort of god to the islanders.

But he remembered the children in the lagoon who had looked three minutes into the future . . .

Punk material for worshippers.

The first blind spot he entered gave him a mild surprise. In what had been thought to be a solid tangle of bamboo and breadfruit trees, Ted found a tiny rectangular lake, made by someone's damming up the leg of a stream. Investigation proved it to be as wide across as he could reach, up to his shoulders in depth, and about twenty paces long.

Quite adequate for practising the Australian crawl.

But why? Why should the islanders, so enviously free of superstition and legislation, take such pains to hide the activity? Were the kids forbidden by their elders to use such a swimming style, and had they built this spot to outwit the oldsters?

A flimsy supposition at best.

He gave it up and left the thicket. It was brighter now. From the western oceans a half moon had swum above the horizon, and with it came a freshening breeze that bore the scent of wood smoke and jasmine. Ted struck off through the shadows for the second spot in his itinerary, a quarter of a mile away.

Nature had caused this one: the disastrous typhoon of '88 which had killed twenty of the islanders had torn from a hillside one of the 'boulders' with its eye and mike set-up, and had hurled it into the sea, wires and all. The area it had scanned was consequently lost, of course – a triangular half-acre of grass and rocks, crossed by two paths. Since then, by careful observation, the top brains of the project had deduced that the area was unchanged and as unimportant as ever.

Ted came to an abrupt halt as he entered the rough meadow.

The top brains, he observed, had made an impulsive deduction. Where the paths had once intersected sat a huge sphere of glass and dull metal. Two rods protruded from a band about its middle, and to an opening between them led a flight of four or five steps.

He crept to within ten yards of the thing before its purpose

dawned on him. After thinking carefully for a few minutes, surprised at his own calmness, he backed cautiously away.

The tide was in when he reached the cliff so he didn't bother to climb down. He jumped. Five minutes later he was within the island, clinging weakly to a submarine's mooring line. Another five sufficed to see him into Dr Finley's austere quarters.

Ted began at the beginning, with the confession that the island children had learned the crawl from himself. The greying director of Project Peace reacted about as Ted had imagined: with anger – controlled, but contemptuous. Ted accepted the man's bitter rebuke without reply.

Lean and dignified in his robe and sandals, Dr Finley paced over to a frosty carafe of water and poured himself a drink. 'And I gather, Jepson, from the condition of your clothes, that you've been topside just now.'

'Yes, sir.'

'Why? Why did you see fit to jeopardize the project again?'

'I went up because the islanders have at least nine children among them capable of precognition. There's a sight-sound record in my quarters proving they knew of the meteorite's coming at least three minutes in advance. Shall I get it for you?'

Finley looked away, sipped his water in silence for a time. 'Not now,' he said thoughtfully. 'I'm inclined to believe you. Something of this sort happened years ago. I was in the View Room and saw a youngster run in panic from beneath a cliff two hours before it gave way and fell.' He put down the glass, lighted a slender cigar. 'All right, Jepson. What did you expect to find topside? Something to vindicate yourself?'

'That's hard to say, sir. I suppose I hoped to, but I was looking more for something that would answer a lot of questions. I knew it would be my last chance.'

Finley's tufted grey eyebrows pulled together quizzically.

'I mean things like their language, sir. Their music. Their impossibly splendid ethics. The air of sophistication and assurance to everything they do.' The explanation sounded lame and inadequate even to Ted. Grimly, he continued. 'Call it

curiosity, maybe, but I was going to have a look in those blind spots.'

They eyed each other for long seconds, Finley drawing thin blue smoke from his cigar, and Ted beginning to itch beneath his wet clothing. The director finally spoke, his voice sardonic. 'Find anything?'

'I did. In sector twenty-seven, a grove of trees, there is a hidden trough of water. Large enough for the children to have learned to swim in.'

Finley frowned, studied the fine ash at the tip of his cigar. 'You're certain it wasn't a natural formation?'

'Quite. There was a stone dam.'

'Hm-m-m.' Finley rolled the cigar carefully between his fingers. 'Any ideas about it?'

'No, sir. Not yet.' It was petty of him, Ted knew, to drag this out so.

'Anything else?'

'Yes.'

'Well, dammit?'

'At sector thirty-five, blind since '88. There's a spaceship just inside the zone.'

Ash fell from the director's cigar on to the rattan carpeting. 'Ridiculous, Jepson. The UN hasn't lost any craft. They're either in Arizona, Australia, or trying to get past the Moon. And, besides, if one had fallen, Radar would have spotted it. What gave you—'

'Excuse me, Dr Finley, but this wasn't any ship of ours. It was small, just about fit into this room. It floated six inches off the ground. The grass around it was trodden down, and something that might be a folding chair stood near by. I say it's a spaceship with some sort of gravity drive. It wasn't built on this planet. And I suggest you get some pictures of it quick.'

Dr Finley set about relighting his cigar as if nothing of importance had been said. From behind a cloud of smoke he shot Ted a swift and hard gaze. 'You sober, Jepson?'

'Of course.'

'Too bad. Maybe there is something up there.' He threw the cigar into a huge pottery tray and stalked angrily about the room.

Ted couldn't figure it. One of the most momentous events in Earth's history had occurred, and Finley expressed displeasure. He asked the older man about this.

'Don't you see, son? If you're correct in your assumptions, it spells the end of Project Peace. The islanders have undoubtedly been in contact with this . . . this visitor. What good are they to us now as a study of mankind? We're on the eve of discovering how to live with ourselves . . . maybe only two or three generations from it, and suddenly the stars are in our backyards. We're not ready. We're no more ready for space than we were for the printing press, or for atomics. We're savages, trying to discover how the islanders live in peace and in happiness, adjusted to their environment. It's too soon, Jepson. Too soon by at least a couple of hundred years.'

'You forgot one thing, sir,' Ted told him quietly.

'What?'

'The islanders undoubtedly know of him, as you said. And he undoubtedly knows of us. But they're giving no more indication of that knowledge than they gave of knowing how to do the crawl. Why haven't we heard them talking about that great globe? Why aren't they up there gathered around it, squatting on their haunches wondering about it? *How long has it been there?*

In silence, old Dr Finley mulled over what Ted had said.

Three minutes later he picked up his phone and called the submarine commander from his bed. 'Captain, I'm sending a man down to pick up a pair of swim fins and a Cousteau lung. He's under my orders. Chap by the name of Jepson. Thanks.'

He called Stores. 'I want a waterproof transceiver. Sound and sight. A small one, hand size. Technician Jepson will be over in a few minutes to pick it up. Goodbye.'

He turned to Ted, studied him bleakly. 'You realize my position, I suppose. If there's nothing up there . . . I'm sending *you* because you've already been seen by the islanders. It hasn't made an observable impact on them, aside from the swimming business. So there's no use showing them another man.' As he began getting into his clothes, he explained that Ted was to keep the two-way open from the moment he touched land topside. He was not to establish contact with the

sphere – that was strictly a UN affair – but was to send a close-up of it, then back off up into the hills and hide the transceiver, aiming it to send images till it ran down. 'All right, son. Get to it.'

An extremely curious group of men were on hand at the sub docks to see him off. They helped him into the swim lung, assisted him in buckling on the rubber fins over his sandals, and after Ted had clambered awkwardly down into the dark lapping water, handed him the transceiver.

'Bring me back a blonde,' shouted one of the sailors from the sub. His words echoed strangely in the stone and water vault.

The lung and the fins made it simple going, despite the two-way's drag. Once outside, and surfaced into the pale moonlight, Ted made for a better landing spot than the isolated beach. He had no intention of ever scaling those rock walls again, so he swam a few hundred yards down the coast and put in on a high reef of coral that formed a rough, natural jetty. Pulling himself carefully up over the sharp incrustations, he scrambled ashore and unfastened the lung from his chest. This and his swim-fins he ditched in the profuse undergrowth and turned on the two-way. When Dr Finley's face and shoulders glowed into the dollar-sized screen, sunk into the set's butt end, Ted told where he was and checked reception.

Then he turned inland, oddly self-conscious as he passed before the hidden eye and mike units, each time resisting the impulse to thumb his nose or grimace into them. Nerves, he guessed. He was pretty highly keyed. He forced himself to take it easier.

Reception, both sight and sound, faded completely away as he neared the blind spot. Ted thought it over, then backed out and checked when the worried-looking Finley reappeared.

'You faded, too,' said the director. 'Some sort of natural blanket, you suppose?'

Ted didn't think so. 'Let me go in closer, sir,' he whispered. 'Maybe it'll lift closer in. If it's from the ship, it's bound to have a sort of umbrella effect, or his stuff wouldn't work, either.' He began to move forward while Finley chewed that over with

one of the electronics men. The blanketing *could* have a central no-zone, he supposed, but there was no telling how close. Thirty feet from the ship? A yard?

He entered the meadow.

It was still there. But now a light burned within it, a soft and faintly greenish glow, like the low flare from an early cathode tube. Something about it served to impress upon Ted the absolute alienness of the ship. His skin prickled uncomfortably as he considered a few of the grimmer possibilities: hard radiations, for one. Should have brought a counter. Extra-terrestrial germs. Should have — He ran a hand over his mouth. Should'a stood in bed.

A glance showed the transceiver still dead. He moved in closer, tempted by the craft's great windows and the half-seen objects within.

'Hello,' said a mild tenor voice behind him. In English.

Ted whirled, automatically hefting the mass of the two-way.

'Peace,' continued the voice. 'And speak island?'

He came forward from the pool of shadow cast by a boulder. A human, Ted saw with relief, clad like himself in shorts and sandals. No, not quite human . . . taller, more slender, and with huge black eyes almost twice the size of Ted's own. But decently humanoid. Thankfully, he put aside all worries of intelligent fungi, frog creatures, and other Sunday supplement spawnings.

'That is yours?' He indicated the alien ship.

'Yes. An old model, but one to which after long years of use I have become attached. It gets me there.'

Ted took a long breath and asked *the* question. 'Where?'

'Back and forth. To this planet from others unknown to you. My home is in another star system. One nearer the centre of the galaxy.' He stepped closer, an effortless grace to his movements suggesting that he was accustomed to greater gravities than Earth's. 'May I compliment you on your composure?'

Ted made the palm up island gesture that meant acceptance, acquiescence. The motion caught the other's notice. 'I tried to make them quit that. Semantically,' he used the English word, 'it's too broad. By the way, I am called Eren Tu.'

'Jepson.' He swallowed with difficulty. 'Ted Jepson. You tried to what?'

'I tried to teach the motion away. Gave them nicer variations, if they must supplement their conversation with visual signals. Gesturing is a trait of your communication about which we know relatively little. While quite familiar with your printed languages, we found it more difficult to study the meanings of winks, salutes, shrugs, and the like. Your films and Earth to Moon broadcasts are helping, however.'

Weakly, Ted spoke the island word expressing utter bewilderment and requesting immediate explanation.

'I can appreciate your emotions, friend. Suppose we sit over there on the grass and make ourselves comfortable.' He led the way. 'And if you have been worrying about my communicating a sickness to you, don't. Our races have a common origin and although we have evolved with slight differences, we are basically compatible. Many meetings prior to ours have proven this.'

Dazed, Ted sat. 'Go slowly for me, Eren Tu. There have been other meetings?'

Many times, he was informed. Eleven hundred Earth-years since the first routine reconnaissance and contact, the visitors from space had, on their periodic checks, learned our languages and sat with our finest minds in attempts to comprehend our bewildering culture.

'But why was there no record of such contacts. Surely—'

'Will you be believed, Ted Jepson? Besides, those we sought out were wise enough to recognize the impossibility of Earth's being accepted into Galactic society.' It was a rule, he explained, that races had to measure to certain minimum standards.

'Such as?'

A recognition and acceptance of the literal immortality of individual personality. That was grounds for automatic membership. A peaceful, yet technically advanced people could enter, if their dominant philosophies contained no dynamically dangerous errors. Or if a race possessed certain extraordinary talents, peculiar to themselves, but which could be beneficially used by others, they might be acceptable.

'And Earth?'

Eren Tu studied Ted's face a moment before replying. 'Earth possesses quite a little of all the eligibilities, but not enough, I fear, to offset its inherent danger to a delicately ordered Galactic confederacy. Can you guess what that is?'

Without too much reflection Ted spoke. 'Our warlike nature?'

'That is but a manifestation of your illness. You are made frustrate and angry, and driven to your wars because you have such poor tools for thinking and communicating with each other. That is why we tried. That is why I have been here, off and on, for over ten years. I am a language instructor, one of several, who have taught the islanders a simple form of the tongue spoken by everyone in civilized space.'

There was a long pause during which Ted noted the other had an extra joint on each thumb. Not that it mattered greatly. He was far more perturbed by what Eren Tu had said. As a philologist and student of semantics he recognized the truth of the other's statement. Humans never had managed to communicate more than fractionally with each other. And, as they thought almost entirely with words, how could their very concepts be worth much? Envy and its inevitable animosity tugged him as he regarded the large-eyed, vaguely sympathetic features of Eren Tu.

'And what if we just came barging into your exclusive society without the invitation?'

The other smiled, a grave wise smile. 'That will not happen.'

Correct again. Ted thought bitterly of the countless attempts in the last twenty-five years to get a ship further than the Moon. Something always went wrong. All electrical equipment would fail; cosmic radiation increased capriciously, dangerously; strange vertigoes assailed the crews. Let them play at voyaging between Earth and Moon, but beyond – discourage them.

'I'm sorry,' Eren Tu told him.

Stop them like the mad dogs they were.

'In time, perhaps, Ted Jepson,' he suggested softly.

Two or three thousand years, maybe, when they'd evolved a language to help them out of kindergarten. A language—

'But the islanders have taught many of us to speak your tongue! It's being taught in several of our universities. If we

were told that's all we had to do – learn the language – we'd all do it.'

'In time, perhaps,' he said again. 'You see, it is one of the basics of Galactic civilization that we tell no one how to mature. That is something a people must do for themselves.'

'But why,' Ted asked, 'did you come to the island and set up school?'

For the first time, Eren Tu frowned. 'We became impatient,' he said. There were certain attributes and talents native to Earthlings, he explained, which would be valuable. Earth's unique sense of humour, for one. It was needed to freshen and revitalize certain other races. To lend its peculiar nutrition to a great stellar group grown sombre and static with age.

An infusion of Earthlings was also longed for because they alone of the humanlike peoples possessed a great number of latent extrasensory abilities. 'To say nothing of your tremendous natural energies and drive,' he added. 'When word was received that this Project Peace, as you term it, existed, there were certain liberal factions who maintained it would not be a violation of observational codes to teach the subjects, the islanders, our tongue – after first conditioning them not to speak of us within hearing of your microphones. In that way, Earth could do what it wished with the language, could mature if it pleased. And while, as you say, thousands of your people are studying to speak it, there has been no discernible change in their natures. Wars still threaten to involve them. Greed and anger and other suicidal tendencies are increasing, instead of lessening. Even you, Ted Jepson, who can talk with me as well as the islanders, have an aura tainted with violence. Why, I cannot say. It is probably something in your heritage which not even semantic correction can touch.'

'But the islanders,' put in Ted, puzzled.

'Yes. The islanders have reacted as we had hoped you all would. They are stable and loving and just. But they know no other language, you see. They have always *thought* in it.'

Ted plucked a blade of grass and chewed its tender stem thoughtfully. It was as bitter as his mood. What a perfect vicious circle: we can't get in because we're not invited. We're not invited because we're anti-social. We're anti-social because

of our clumsy thought and speech processes, and they'll stay clumsy because we can't get in. 'You've wrecked Project Peace, too, you know. Maybe we could have made it without your . . . help.'

'You are compensated for our interference. You have the language. A fair trade.'

Ted shrugged. 'Perhaps. And what about these poor devils? The islanders? What have they got?'

Eren Tu looked for a long moment in the direction of the village. 'That is being debated by my superiors. There are some who hold we should wipe out all memory of our visits. Others want them taken from the island and admitted as special wards to our society. Word of their decision should reach me any hour now. An important happening was predicted for tonight, and I don't believe your coming was meant.'

'Predicted?'

'Yes, Ted Jepson. I spoke of your race's extrasensory abilities. Apparently certain areas of the islander's brains were activated by the proper semantic processes. That has happened in non-human specie. All manner of mental talents have been demonstrated when the thinking has been properly changed. You realize,' his tones became self-depreciating, 'I'm speaking as a layman. That isn't my field. At any rate, after warning me that the technician who taught them to swim was coming up—'

Something extremely ironic dawned on Ted. 'They know of the project?'

'Certainly. They've always known of it.'

Ted's labouring mind turned up a wry memory; a scrap of joke about the researcher who bent down to peer in at his laboratory ape, only to find an inquisitive brown eye at the other side of the peephole. 'Go on,' he said wearily.

'They look only so far into the future. The distance seems to depend not only on the individual but on the nature of the event. It varies – a few hours, at the most. Beyond that they say the pictures are blurred and often inaccurate, coloured, I suppose, with imagination.' Eren Tu broke off, appeared to be listening intently. Then he sprang to his feet and peered down the grassy slope into the darkness.

Someone was coming. Ted heard them now, too.

The islanders! And they were singing. A soft, happy song, filled with humour and expectation that was often sung before a celebration. It served to remind Ted of a question. 'By the way, I suppose not even their music is *theirs*?'

Without looking away from the oncoming crowd, Eren Tu admitted that an early visitor had carelessly underestimated the islanders' hearing ability, and had allowed his craft's communication set to play too loudly. 'That song they're doing now is based on a melody popular twenty years ago in my star system. It's a distinct improvement on the original, though.'

They were closer now, and Ted could see that in keeping with their song, they had bedecked themselves with gay garlands of flowers. Even the vanguard of scampering children wore blossoms of jasmine in their hair. He began to recognize individual members of the party: 'Old' Emo, with the coral scars about his rugged shoulders. Nea, the girl he had watched when he came on duty. The small blond lad who had given the first warning of the meteorite. Crippled Tumo, the young spear maker. And over three hundred others in a long, singing, laughing file that wound down and out of sight into the darkness of the valley.

Quite a turnout for a couple of hours before dawn.

Why?

Doc Finley and the techs on duty in the View Room must be having fits, Ted imagined. Probably think the islanders have come to greet me. Surreptitiously he checked the screen on the two-way. Still dark.

He hoped someone would have guts and presence of mind enough to sneak a cameraman out and up into the hilltop near by. If the world had proof of Eren Tu's visit—

But then what? A soul-corroding frustration at being left out, unwanted?

The first of the children came up to them now. They formed a ragged ring about the two men; shy, giggling, or wide-eyed, according to their natures. Ted's gaze sought out the little blond youngster who had starred in the lagoon episode. 'Hello son,' he smiled. 'I'm Ted. I've forgotten your name.'

'Lute. What's the matter in your head?'

'Huh?' Ted's hand went to his hair. 'In? Or on?'

The child made a disapproving sound. 'You sit wrong.' Leaving Ted to chew this over, he turned to watch his elders arrive. A tall Latinish man, one of the original 'children,' Ted recalled, greeted Eren Tu cordially.

'Your happiness is mine,' Eren Tu observed, taking in the growing crowd with his eyes. 'This is the important happening that was foretold?'

'Yes.' The dark islander walked abruptly over to Ted. 'We will become good friends,' he said. It was not a question, nor a command. Simply a statement. He looked earnestly across at Eren Tu. 'He sits in the wrong place, doesn't he?'

Ted's head began to ache. 'That's the second time it's been mentioned. Explain, please.' He pressed his temples.

'Ted Jepson,' called the man from the stars excitedly. 'They tell me your men from below will be coming out of the hilltop.'

'That's right,' added the tall islander. 'I have seen only a little of it, and I could not tell when it would take place, but Lute and Nea and others of the young ones say it will be very soon. It will be after you have taken up that object' – he pointed at the two-way – 'and speak into it.'

'But he can't do that,' protested Eren Tu. 'I have something in my ship that prevents it.'

'You will soon turn it off.'

'Why?' The alien's gravity and composure was wearing a bit thin.

'Because he—' the islander gestured to Ted – 'will soon learn something.'

Never had Ted had such a headache. And, as with most extremely healthy people, the minor ailment was worrying him. With only part of his attention had he been following the bewildering conversation about him. Most of his concern was centred on the fingers of fire that were darting between his temples. He wondered if it could be a pressure-head from the underwater swim. Or maybe a nasty fungus from the ship, despite its owner's assurances? Through eyes that were beginning to water he made out the boy, Lute, confronting him 'My father,' he announced gravely, 'wants us to talk.'

'Sure, boy.' Ted massaged the back of his neck.

'I told him how it was that I saw you sitting wrong, and he said for me to have you sit better. It is part of what will happen, I can see now.'

Ted was quiet, baffled, and more than a little frightened. He dimly noticed that late arrivals to the scene were hoisting up their children so that they might not miss anything.

'Maybe I'm beginning to understand.' Eren Tu had come over. 'They have been telling me you do not think correctly. They say you operate your thoughts from the wrong place. There is an asleep area to your mind that, apparently, they can see. Does it mean anything to you?'

Ted struggled: they knew of the emergency exit that could be blasted open atop the island's highest hill. They were expecting him to make a call to Finley with the two-way. How did that tie in with his headache, with an 'asleep' area of his mind?

'Let the boy, Lute, do what he wants,' said Eren Tu.

Ted dug at his temples with his knuckles. 'All right, kid, it's your show.'

'I'm sorry it aches,' said the boy. 'That's because it was asleep and we all looked at it. But it will be over in a moment.' A serious frown of concentration tugged at his brows. He gazed up into Ted's eyes and began giving him certain curious instructions, the very formulation and expression of which were possible only because of the fluidity and precision of the island language. Ted was made partially to blank his mind and to let the sensation of pain settle into a particular area. When it had coalesced and steadied down, Lute gave him what amounted to the form and dimensions of his identity-extensions. A corner of his thoughts found time to rebel in admiration: orthodox mind science would probably have gone on missing the simplicity that was the essence of individual identity for a thousand years.

Ted moved this concept of his identity into the spot designated by the pain. He settled himself there and withdrew utterly from the old seat of operations.

The pain vanished. And with his smile of pleasure came an indescribable mixture of emotions; peace was there, but it was a thrilling and dynamic thing, not placidity. A strength and

courage such as he had never before known seemed his now, and a burning desire to use this vigour to live and to experience and to *be*.

He was in love. With everything.

'Don't you see,' he shouted at the bewildered Eren Tu, 'I'm whole, I'm well, I'm as I was probably intended to be. I'm like the islanders!' Song broke out around him as he told what had happened. 'This is what my planet's religious men have been trying to speak of. But without knowing it for themselves, and without a language to teach it, they made it into a soggy, revolting piety. This is *love*, and I'm operating *from* it!'

'Can others of you make the change-over?'

'Why not?' Ted grabbed the grinning blond lad to him and tousled his hair. 'Certainly. Anyone that speaks island tongue. There are thousands of us. More every month. Tell him, Lute.'

Nea came up and gave him flowers for his hair. A mighty, grinning Chinese put a garland around his neck. Each peered intently at Ted, then nodded reassurance at Eren Tu.

The man from the stars had allowed blossoms to be thrust over each ear. His holiday appearance contrasted comically to Ted with his dubious and uncertain air. He shook his head. 'Apparently there's only one way of finding out for sure. If they make the change—' He turned for the ship, muttering something about unprecedented procedure.

The sky was lighter now, and the night wind was softening into a fragrant breeze. Ted faced into it and looked up at the morning stars. He was smiling at a particularly bright one when the set came alive.

'Hello, Project,' he said. 'This is Jepson. Come on up, all of you. There's going to be the damnedest sunrise you ever saw.'

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