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Jim Ballard has produced a long list of memorable stories during the past four years—two of them included in Dell's S-F: Year's Best. With this latest story we feel that he is comparable in stature to Brian Aldiss who is undoubtedly the leading British writer of the day.

THE VOICES OF TIME**by J. G. BALLARD**

o n e

Later Powers often thought of Whitby, and the strange grooves the biologist had cut, apparently at random, all over the floor of the empty swimming pool. An inch deep and twenty feet long, interlocking to form an elaborate ideogram like a Chinese character, they had taken him all summer to complete, and he had obviously thought about little else, working away tirelessly through the long desert afternoons. Powers had watched him from his office window at the far end of the Neurology wing, carefully marking out his pegs and string, carrying away the cement chips in a small canvas bucket. After Whitby's suicide no one had bothered about the grooves, but Powers often borrowed the supervisor's key and let himself into the disused pool, and would look down at the labyrinth of mouldering gulleys, half-filled with water leaking in from the chlorinator, an enigma now past any solution.

Initially, however, Powers was too preoccupied with completing his work at the Clinic and planning his own final withdrawal. After the first frantic weeks of panic he had

managed to accept an uneasy compromise that allowed him to view his predicament with the detached fatalism he had previously reserved for his patients. Fortunately he was moving down the physical and mental gradients simultaneously—lethargy and inertia blunted his anxieties, a slackening metabolism made it necessary to concentrate to produce a connected thought-train. In fact, the lengthening intervals of dreamless sleep were almost restful. He found himself beginning to look forward to them, made no effort to wake earlier than was essential.

At first he had kept an alarm clock by his bed, tried to compress as much activity as he could into the narrowing hours of consciousness, sorting out his library, driving over to Whitby's laboratory every morning to examine the latest batch of X-ray plates, every minute and hour rationed like the last drops of water in a canteen.

Anderson, fortunately, had unwittingly made him realize the pointlessness of this course.

After Powers had resigned from the Clinic he still continued to drive in once a week for his check-up, now little more than a formality. On what turned out to be the last occasion Anderson had perfunctorily taken his blood-count, noting Powers' slacker facial muscles, fading pupil reflexes, the unshaven cheeks.

He smiled sympathetically at Powers across the desk, wondering what to say to him. Once he had put on a show of encouragement with the more intelligent patients, even tried to provide some sort of explanation. But Powers was too difficult to reach—neurosurgeon extraordinary, a man always out on the periphery, only at ease working with unfamiliar materials. To himself he thought; *I'm sorry, Robert. What can I say—“Even the sun is growing cooler—?”* He watched Powers drum his fingers restlessly on the enamel desk top, his eyes glancing at the spinal level charts hung around the office. Despite his unkempt appearance—he had been wearing the same unironed shirt and dirty white plimsoles a week ago—Powers looked composed and self-possessed, like a Conrad beachcomber more or less reconciled to his own weaknesses.

“What are you doing with yourself, Robert?” he asked. “Are you still going over to Whitby's lab?”

“As much as I can. It takes me half an hour to cross the lake, and I keep on sleeping through the alarm clock. I may leave my place and move in there permanently.”

Anderson frowned. “Is there much point? As far as I could make out Whitby's work was pretty speculative—” He broke off, realizing the implied criticism of Powers' own disastrous work at the Clinic, but Powers seemed to ignore this, was examining the pattern of shadows on the ceiling. “Anyway, wouldn't it be better to stay where you are, among your own things, read through Toynbee and Spengler again?”

Powers laughed shortly. “That's the last thing I want to do. I want to *forget* Toynbee and Spengler, not try to remember them. In fact, Paul, I'd like to forget everything. I don't know whether I've got enough time, though. How much can you forget in three months?”

“Everything, I suppose, if you want to. But don't try to race the clock.”

Powers nodded quietly, repeating this last remark to himself. Racing the clock was exactly what he had been doing. As he stood up and said goodbye to Anderson he suddenly decided to throw away his alarm clock, escape from his futile obsession with time. To remind himself he unfastened his wrist-watch and scrambled the setting, then slipped it into his pocket. Making his way out to the car park he reflected on the freedom this simple act gave him. He would explore the lateral byways now, the side doors, as it were, in the corridors of time. Three months could be an eternity.

He picked his car out of the line and strolled over to it, shielding his eyes from the heavy sunlight beating down across the parabolic sweep of the lecture theatre roof. He was about to climb in when he saw that someone had traced with a finger across the dust caked over the windshield:

96,688,365,498,721

Looking over his shoulder, he recognised the white Packard parked next to him, peered inside and saw a lean-faced young man with blonde sun-bleached hair and a high cerebrotonic forehead watching him behind dark glasses. Sitting beside him at the wheel was a raven-haired girl whom he had often seen around the psychology department. She had intelligent but somehow rather oblique eyes, and Powers remembered that the younger doctors called her “the girl from Mars.”

“Hello, Kaldren,” Powers said to the young man. “Still following me around?”

Kaldren nodded. “Most of the time, doctor.” He sized Powers up shrewdly. “We haven't seen very much of you

recently, as a matter of fact. Anderson said you'd resigned, and we noticed your laboratory was closed."

Powers shrugged. "I felt I needed a rest. As you'll understand, there's a good deal that needs re-thinking."

Kaldren frowned half-mockingly. "Sorry to hear that, doctor. But don't let these temporary setbacks depress you." He noticed the girl watching Powers with interest. "Coma's a fan of yours. I gave her your papers from *American Journal of Psychiatry*, and she's read through the whole file."

The girl smiled pleasantly at Powers, for a moment dispelling the hostility between the two men. When Powers nodded to her she leaned across Kaldren and said: "Actually I've just finished Noguchi's autobiography—the great Japanese doctor who discovered the spirochaete. Somehow you remind me of him—there's so much of yourself in all the patients you worked on."

Powers smiled wanly at her, then his eyes turned and locked involuntarily on Kaldren's. They stared at each other sombrely for a moment, and a small tic in Kaldren's right cheek began to flicker irritatingly. He flexed his facial muscles, after a few seconds mastered it with an effort, obviously annoyed that Powers should have witnessed this brief embarrassment.

"How did the clinic go today?" Powers asked. "Have you had any more . . . headaches?"

Kaldren's mouth snapped shut, he looked suddenly irritable. "Whose care am I in, doctor? Yours or Anderson's? Is that the sort of question you should be asking now?"

Powers gestured deprecatingly. "Perhaps not." He cleared his throat; the heat was ebbing the blood from his head and he felt tired and eager to get away from them. He turned towards his car, then realized that Kaldren would probably follow, either try to crowd him into the ditch or block the road and make Powers sit in his dust all the way back to the lake. Kaldren was capable of any madness.

"Well, I've got to go and collect something," he said, adding in a firmer voice: "Get in touch with me, though, if you can't reach Anderson."

He waved and walked off behind the line of cars. Reflected in the windows he could see Kaldren looking back and watching him closely.

He entered the Neurology wing, paused thankfully in the cool foyer, nodding to the two nurses and the armed guard at the reception desk. For some reason the terminals sleeping in the adjacent dormitory block attracted hordes of would-be sightseers, most of them cranks with some magical anti-narcoma remedy, or merely the idly curious, but a good number of quite normal people many of whom had travelled thousands of miles, impelled towards the Clinic by some strange instinct, like animals migrating to a pre-view of their racial graveyards.

He walked along the corridor to the supervisor's office overlooking the recreation deck, borrowed the key and made his way out through the tennis courts and calisthenics rigs to the enclosed swimming pool at the far end. It had been disused for months, and only Powers' visits kept the lock free. Stepping through, he closed it behind him and walked past the peeling wooden stands to the deep end.

Putting a foot up on the diving board, he looked down at Whitby's ideogram. Damp leaves and bits of paper obscured it, but the outlines were just distinguishable. It covered almost the entire floor of the pool and at first glance appeared to represent a huge solar disc, with four radiating diamond-shaped arms, a crude Jungian mandala.

Wondering what had prompted Whitby to carve the device before his death, Powers noticed something moving through the debris in the centre of the disc. A black, horny-shelled animal about a foot long was nosing about in the slush, heaving itself on tired legs. Its shell was articulated, and vaguely resembled an armadillo's. Reaching the edge of the disc, it stopped and hesitated, then slowly backed away into the centre again, apparently unwilling or unable to cross the narrow groove.

Powers looked around, then stepped into one of the changing stalls and pulled a small wooden clothes locker off its rusty wall bracket. Carrying it under one arm, he climbed down the chromium ladder into the pool and walked carefully across the slithery floor towards the animal. As he approached it sidled away from him, but he trapped it easily, using the lid to lever it into the box.

The animal was heavy, at least the weight of a brick. Powers tapped its massive olive-black carapace with his knuckle, noting the triangular warty head jutting out below its rim like a turtle's, the thickened pads beneath the first digits of the pentadactyl forelimbs.

He watched the three-lidded eyes blinking at him anxiously from the bottom of the box.

"Expecting some really hot weather?" he murmured. "That lead umbrella you're carrying around should keep you cool."

He closed the lid, climbed out of the pool and made his way back to the supervisor's office, then carried the box out to his car.

"... Kaldren continues to reproach me (Powers wrote in his diary). For some reason he seems unwilling to accept his isolation, is elaborating a series of private rituals to replace the missing hours of sleep. Perhaps I should tell him of my own approaching zero, but he'd probably regard this as the final unbearable insult, that I should have in excess what he so desperately yearns for. God knows what might happen. Fortunately the nightmarish visions appear to have receded for the time being..."

Pushing the diary away, Powers leaned forwards across the desk and stared out through the window at the white floor of the lake bed stretching towards the hills along the horizon. Three miles away, on the far shore, he could see the circular bowl of the radio-telescope revolving slowly in the clear afternoon air, as Kaldren tirelessly trapped the sky, sluicing in millions of cubic parsecs of sterile ether, like the nomads who trapped the sea along the shores of the Persian Gulf.

Behind him the air-conditioner murmured quietly, cooling the pale blue walls half-hidden in the dim-light. Outside the air was bright and oppressive, the heat waves rippling up from the clumps of gold-tinted cacti below the Clinic blurring the sharp terraces of the twenty-storey Neurology block. There, in the silent dormitories behind the sealed shutters, the terminals slept their long dreamless sleep. There were now over 500 of them in the Clinic, the vanguard of a vast somnambulist army massing for its last march. Only five years had elapsed since the first narcoma syndrome had been recognised, but already huge government hospitals in the east were being readied for intakes in the thousands, as more and more cases came to light.

Powers felt suddenly tired, and glanced at his wrist, wondering how long he had to 8 o'clock, his bed-time for the next week or so. Already he missed the dusk, soon would wake to his last dawn.

His watch was in his hip pocket. He remembered his decision not to use his time-pieces, and sat back and stared at the bookshelves beside the desk. There were rows of green-covered AEC publications he had removed from Whitby's library, papers in which the biologist described his work out in the Pacific after the H-tests. Many of them Powers knew almost by heart, read a hundred times in an effort to grasp Whitby's last conclusions. Toynbee would certainly be easier to forget.

His eyes dimmed momentarily, as the tall black wall in the rear of his mind cast its great shadow over his brain. He reached for the diary thinking of the girl in Kaldren's car—Coma he had called her, another of his insane jokes—and her reference to Noguchi. Actually the comparison should have been made with Whitby, not himself; the monsters in the lab were nothing more than fragmented mirrors of Whitby's mind, like the grotesque radio-shielded frog he had found that morning in the swimming pool.

Thinking of the girl Coma, and the heartening smile she had given him, he wrote :

Woke 6-33 am. Last session with Anderson. He made it plain he's seen enough of me, and from now on I'm better alone. To sleep 8-00? (these count-downs terrify me.)

He paused, then added :

Goodbye, Eniwetok.

t w o

He saw the girl again the next day at Whitby's laboratory. He had driven over after breakfast with the new specimen, eager to get it into a vivarium before it died. The only previous armoured mutant he had come across had nearly broken his neck. Speeding along the lake road a month or so earlier he had struck it with the off-side front wheel, expecting the small creature to flatten instantly. Instead its hard lead-packed shell had remained rigid, even though the organism within it had been pulped, had flung the car heavily into the ditch. He had gone back for the shell, later weighed it at the laboratory, found it contained over 600 grammes of lead.

Quite a number of plants and animals were building up heavy metals as radiological shields. In the hills behind the beach

house a couple of old-time prospectors were renovating the derelict gold-panning equipment abandoned over eighty years ago. They had noticed the bright yellow tints of the cacti, run an analysis and found that the plants were assimilating gold in extractable quantities, although the soil concentrations were un-workable. Oak Ridge was at last paying a dividend!!

Waking that morning just after 6-45—ten minutes later than the previous day (he had switched on the radio, heard one of the regular morning programmes as he climbed out of bed)—he had eaten a light unwanted breakfast, then spent an hour packing away some of the books in his library, crating them up and taping on address labels to his brother.

He reached Whitby's laboratory half an hour later. This was housed in a 100-foot wide geodesic dome built beside his chalet on the west shore of the lake about a mile from Kaldren's summer house. The chalet had been closed after Whitby's suicide, and many of the experimental plants and animals had died before Powers had managed to receive permission to use the laboratory.

As he turned into the driveway he saw the girl standing on the apex of the yellow-ribbed dome, her slim figure silhouetted against the sky. She waved to him, then began to step down across the glass polyhedrons and jumped nimbly into the driveway beside the car.

"Hello," she said, giving him a welcoming smile. "I came over to see your zoo. Kaldren said you wouldn't let me in if he came so I made him stay behind."

She waited for Powers to say something while he searched for his keys, then volunteered: "If you like, I can wash your shirt."

Powers grinned at her, peered down ruefully at his dust-stained sleeves. "Not a bad idea. I thought I was beginning to look a little uncared-for." He unlocked the door, took Coma's arm. "I don't know why Kaldren told you that—he's welcome here any time he likes."

"What have you got in there?" Coma asked, pointing at the wooden box he was carrying as they walked between the gear-laden benches.

"A distant cousin of our's I found. Interesting little chap. I'll introduce you in a moment."

Sliding partitions divided the dome into four chambers. Two of them were store-rooms, filled with spare tanks,

apparatus, cartons of animal food and test rigs. They crossed the third section, almost filled by a powerful X-ray projector, a giant 250 mega-amp G.E. Maxitron, angled onto a revolving table, concrete shielding blocks lying around ready for use like huge building bricks.

The fourth chamber contained Powers' zoo, the vivaria jammed together along the benches and in the sinks, big coloured cardboard charts and memos pinned onto the draught hoods above them, a tangle of rubber tubing and power leads trailing across the floor. As they walked past the lines of tanks dim forms shifted behind the frosted glass, and at the far end of the aisle there was a sudden scurrying in a large scale cage by Powers' desk.

Putting the box down on his chair, he picked a packet of peanuts off the desk and went over to the cage. A small black-haired chimpanzee wearing a dented jet pilot's helmet swarmed deftly up the bars to him, chirped happily and then jumped down to a miniature control panel against the rear wall of the cage. Rapidly it flicked a series of buttons and toggles, and a succession of coloured lights lit up like a juke box and jangled out a two-second blast of music.

"Good boy," Powers said encouragingly, patting the chimp's back and shovelling the peanuts into its hands. "You're getting much too clever for that one, aren't you?"

The chimp tossed the peanuts into the back of its throat with the smooth easy motions of a conjuror, jabbering at Powers in a sing-song voice.

Coma laughed and took some of the nuts from Powers. "He's sweet. I think he's talking to you."

Powers nodded. "Quite right, he is. Actually he's got a two-hundred word vocabulary, but his voice box scrambles it all up." He opened a small refrigerator by the desk, took out half a packet of sliced bread and passed a couple of pieces to the chimp. It picked an electric toaster off the floor and placed it in the middle of a low wobbling table in the centre of the cage, whipped the pieces into the slots. Powers pressed a tab on the switchboard beside the cage and the toaster began to crackle softly.

"He's one of the brightest we've had here, about as intelligent as a five-year-old child, though much more self-sufficient in a lot of ways." The two pieces of toast jumped out of their

slots and the chimp caught them neatly, nonchalantly patting its helmet each time, then ambled off into a small ramshackle kennel and relaxed back with one arm out of a window, sliding the toast into its mouth.

"He built that house himself," Powers went on, switching off the toaster. "Not a bad effort, really." He pointed to a yellow polythene bucket by the front door of the kennel, from which a battered looking geranium protruded. "Tends that plant, cleans up the cage, pours out an endless stream of wisecracks. Pleasant fellow all round."

Coma was smiling broadly to herself. "Why the space helmet, though?"

Powers hesitated. "Oh, it—er—it's for his own protection. Sometimes he gets rather bad headaches. His predecessors all—" He broke off and turned away. "Let's have a look at some of the other inmates."

He moved down the line of tanks, beckoning Coma with him. "We'll start at the beginning." He lifted the glass lid off one of the tanks, and Coma peered down into a shallow bath of water, where a small round organism with slender tendrils was nestling in a rockery of shells and pebbles.

"Sea anemone. Or was. Simple coelenterate with an open-ended body cavity." He pointed down to a thickened ridge of tissue around the base. "It's sealed up the cavity, converted the channel into a rudimentary notochord, first plant ever to develop a nervous system. Later the tendrils will knot themselves into a ganglion, but already they're sensitive to colour. Look." He borrowed the violet handkerchief in Coma's breast pocket spread it across the tank. The tendrils flexed and stiffened, began to weave slowly, as if they were trying to focus.

"The strange thing is that they're completely insensitive to white light. Normally the tendrils register shifting pressure gradients, like the tympanic diaphragms in your ears. Now it's almost as if they can *hear* primary colours, suggests it's re-adapting itself for a non-aquatic existence in a static world of violent colour contrasts."

Coma shook her head, puzzled. "Why, though?"

"Hold on a moment. Let me put you in the picture first." They moved along the bench to a series of drum-shaped cages made of wire mosquito netting. Above the first was a large white cardboard screen bearing a blown-up microphoto of a tall pagoda-like chain, topped by the legend: "Drosophila: 15 rontgens/min."

Powers tapped a small perspex window in the drum. "Fruitfly. Its huge chromosomes make it a useful test vehicle." He bent down, pointed to a grey V-shaped honeycomb suspended from the roof. A few flies emerged from entrances, moving about busily. "Usually it's solitary, a nomadic scavenger. Now it forms itself into well-knit social groups, has begun to secrete a thin sweet lymph something like honey."

"What's this?" Coma asked, touching the screen.

"Diagram of a key gene in the operation." He traced a spray of arrows leading from a link in the chain. The arrows were labelled: "Lymph gland" and subdivided "sphincter muscles, epithelium, templates."

"It's rather like the perforated sheet music of a player piano," Powers commented, "or a computer punch tape. Knock out one link with an X-ray beam, lose a characteristic, change the score."

Coma was peering through the window of the next cage and pulling an unpleasant face. Over her shoulder Powers saw she was watching an enormous spider-like insect, as big as a hand, its dark hairy legs as thick as fingers. The compound eyes had been built up so that they resembled giant rubies.

"He looks unfriendly," she said. "What's that sort of rope ladder he's spinning?" As she moved a finger to her mouth the spider came to life, retreated into the cage and began spewing out a complex skein of interlinked grey thread which it slung in long loops from the roof of the cage.

"A web," Powers told her. "Except that it consists of nervous tissue. The ladders form an external neural plexus, an inflatable brain as it were, that he can pump up to whatever size the situation calls for. A sensible arrangement, really, far better than our own."

Coma backed away. "Gruesome. I wouldn't like to go into his parlour."

"Oh, he's not as frightening as he looks. Those huge eyes staring at you are blind. Or, rather, their optical sensitivity has shifted down the band, the retinas will only register gamma radiation. Your wrist-watch has luminous hands. When you moved it across the window he started thinking. World War IV should really bring him into his element."

They strolled back to Powers' desk. He put a coffee pan over a bunsen and pushed a chair across to Coma. Then he

opened the box, lifted out the armoured frog and put it down on a sheet of blotting paper.

"Recognise him? Your old childhood friend, the common frog. He's built himself quite a solid little air raid shelter." He carried the animal across to a sink, turned on the tap and let the water play softly over its shell. Wiping his hands on his shirt, he came back to the desk.

Coma brushed her long hair off her forehead, watched him curiously.

"Well, what's the secret?"

Powers lit a cigarette. "There's no secret. Teratologists have been breeding monsters for years. Have you ever heard of the 'silent pair'?"

She shook her head.

Powers stared moodily at the cigarette for a moment, riding the kick the first one of the day always gave him. "The so-called 'silent pair' is one of modern genetics' oldest problems, the apparently baffling mystery of the two inactive genes which occur in a small percentage of all living organisms, and appear to have no intelligible role in their structure or development. For a long while now biologists have been trying to activate them, but the difficulty is partly in identifying the silent genes in the fertilised germ cells of parents known to contain them, and partly in focussing a narrow enough X-ray beam which will do no damage to the remainder of the chromosome. However, after about ten years' work Dr. Whitby successfully developed a whole-body irradiation technique based on his observation of radiobiological damage at Eniwetok."

Powers paused for a moment. "He had noticed that there appeared to be more biological damage after the tests—that is, a greater transport of energy—than could be accounted for by direct radiation. What was happening was that the protein latices in the genes were building up energy in the way that any vibrating membrane accumulates energy when it resonates—you remember the analogy of the bridge collapsing under the soldiers marching in step—and it occurred to him that if he could first identify the critical resonance frequency of the latices in any particular silent gene he could then radiate the entire living organism, and not simply its germ cells, with a low field that would act selectively on the silent gene and cause no damage to the remainder of the chromosomes, whose latices would resonate critically only at other specific frequencies."

Powers gestured around the laboratory with his cigarette. "You see some of the fruits of this 'resonance transfer' technique around you."

Coma nodded. "They've had their silent genes activated?"

"Yes, all of them. These are only a few of the thousands of specimens who have passed through here, and as you've seen, the results are pretty dramatic."

He reached up and pulled across a section of the sun curtain. They were sitting just under the lip of the dome, and the mounting sunlight had begun to irritate him.

In the comparative darkness Coma noticed a stroboscope winking slowly in one of the tanks at the end of the bench behind her. She stood up and went over to it, examining a tall sun-flower with a thickened stem and greatly enlarged receptacle. Packed around the flower, so that only its head protruded, was a chimney of grey-white stones, neatly cemented together and labelled:

Cretaceous Chalk : 60,000,000 years

Beside it on the bench were three other chimneys, these labelled "Devonian Sandstone : 290,000,000 years," "Asphalt 20 years," Polyvinylchloride : 6 months."

"Can you see those moist white discs on the sepals," Powers pointed out. "In some way they regulate the plant's metabolism. It literally sees time. The older the surrounding environment, the more sluggish its metabolism. With the asphalt chimney it will complete its annual cycle in a week, with the PVC one in a couple of hours."

"Sees time," Coma repeated, wonderingly. She looked up at Powers, chewing her lower lip reflectively. "It's fantastic. Are these the creatures of the future, doctor?"

"I don't know," Powers admitted. "But if they are their world must be a monstrous surrealist one."

t h r e e

He went back to the desk, pulled two cups from a drawer and poured out the coffee, switching off the bunsen. "Some people have speculated that organisms possessing the silent pair of genes are the fore-runners of a massive move up the evolutionary slope, that the silent genes are a sort of code, a divine message that we inferior organisms are carrying for our more highly developed descendants. It may well be true—perhaps we've broken the code too soon."

"Why do you say that?"

"Well, as Whitby's death indicates, the experiments in this laboratory have all come to a rather unhappy conclusion. Without exception the organisms we've irradiated have entered a final phase of totally disorganised growth, producing dozens of specialised sensory organs whose function we can't even guess. The results are catastrophic—the anemone will literally explode, the *Drosophila* cannibalise themselves, and so on. Whether the future implicit in these plants and animals is ever intended to take place, or whether we're merely extrapolating—I don't know. Sometimes I think, though, that the new sensory organs developed are parodies of their real intentions. The specimens you've seen today are all in an early stage of their secondary growth cycles. Later on they begin to look distinctly bizarre."

Coma nodded. "A zoo isn't complete without its keeper," she commented. "What about Man?"

Powers shrugged. "About one in every 100,000—the usual average—contain the silent pair. You might have them—or I. No one has volunteered yet to undergo whole-body irradiation. Apart from the fact that it would be classified as suicide, if the experiments here are any guide the experience would be savage and violent."

He sipped at the thin coffee, feeling tired and somehow bored. Recapitulating the laboratory's work had exhausted him.

The girl leaned forward. "You look awfully pale," she said solicitously. "Don't you sleep well?"

Powers managed a brief smile. "Too well," he admitted. "It's no longer a problem with me."

"I wish I could say that about Kaldren. I don't think he sleeps anywhere near enough. I hear him pacing around all night." She added: "Still, I suppose it's better than being a terminal. Tell me doctor, wouldn't it be worth trying this radiation technique on the sleepers at the Clinic? It might wake them up before the end. A few of them must possess the silent genes."

"They *all* do," Powers told her. "The two phenomena are very closely linked, as a matter of fact." He stopped, fatigue dulling his brain, and wondered whether to ask the girl to leave. Then he climbed off the desk and reached behind it, picked up a tape recorder.

Switching it on, he zeroed the tape and adjusted the speaker volume.

"Whitby and I often talked this over. Towards the end I took it all down. He was a great biologist, so let's hear it in his own words. It's absolutely the heart of the matter."

He flipped the table on, adding: "I've played it over to myself a thousand times, so I'm afraid the quality is poor."

An older man's voice, sharp and slightly irritable, sounded out above a low buzz of distortion, but Coma could hear it clearly.

WHITBY: . . . for heaven's sake, Robert, look at those FAO statistics. Despite an annual increase of five per cent in acreage sown over the past fifteen years, world wheat crops have continued to decline by a factor of about two per cent. The same story repeats itself ad nauseam. Cereals and root crops, dairy yields, ruminant fertility—are all down. Couple these with a mass of parallel symptoms, anything you care to pick from altered migratory routes to longer hibernation periods, and the overall pattern is incontrovertible.

POWERS: Population figures for Europe and North America show no decline, though.

WHITBY: Of course not, as I keep pointing out. It will take a century for such a fractional drop in fertility to have any effect in areas where extensive birth control provides an artificial reservoir. One must look at the countries of the Far East, and particularly at those where infant mortality has remained at a steady level. The population of Sumatra, for example, has declined by over fifteen per cent in the last twenty years. A fabulous decline! Do you realise that only two or three decades ago the Neo-Malthusians were talking about a 'world population explosion'? In fact, it's an implosion. Another factor is—

Here the tape had been cut and edited, and Whitby's voice, less querulous this time, picked up again.

. . . just as a matter of interest, tell me something: how long do you sleep each night?

POWERS: I don't know exactly; about eight hours, I suppose.

WHITBY : The proverbial eight hours. Ask anyone and they say automatically 'eight hours.' As a matter of fact you sleep about ten and a half hours, like the majority of people. I've timed you on a number of occasions. I myself sleep eleven. Yet thirty years ago people did indeed sleep eight hours, and a century before that they slept six or seven. In Vasari's 'Lives' one reads of Michelangelo sleeping for only four or five hours, painting all day at the age of eighty and then working through the night over his anatomy table with a candle strapped to his forehead. Now he's regarded as a prodigy, but it was unremarkable then. How do you think the ancients, from Plato to Shakespeare, Aristotle to Aquinas, were able to cram so much work into their lives? Simply because they had an extra six or seven hours every day. Of course, a second disadvantage under which we labour is a lowered basal metabolic rate—another factor no one will explain.

POWERS : I suppose you could take the view that the lengthened sleep interval is a compensation device, a sort of mass neurotic attempt to escape from the terrifying pressures of urban life in the late Twentieth century.

WHITBY : You could, but you'd be wrong. It's simply a matter of biochemistry. The ribonucleic acid templates which unravel the protein chains in all living organisms are wearing out, the dies enscripting the protoplasmic signature have become blunted. After all, they've been running now for over a thousand million years. It's time to re-tool. Just as an individual organism's life span is finite, or the life of a yeast colony or a given species, so the life of an entire biological kingdom is of fixed duration. It's always been assumed that the evolutionary slope reaches forever upwards, but in fact the peak has already been reached, and the pathway now leads downwards to the common biological grave. It's a despairing and at present unacceptable vision of the future, but it's the only one. Five thousand centuries from now our descendants, instead of being multi-brained star-men, will probably be naked prognathus idiots with hair on their foreheads, grunting their way through the remains of this Clinic like Neolithic men caught in a macabre inversion of time. Believe me, I pity them, as I pity myself. My total failure, my absolute lack of any moral or biological right to existence, is implicit in every cell of my body . . .

The tape ended, the spool ran free and stopped. Powers closed the machine, then massaged his face. Coma sat quietly, watching him and listening to the chimp playing with a box of puzzle dice.

"As far as Whitby could tell," Powers said, "the silent genes represent a last desperate effort of the biological kingdom to keep its head above the rising waters. Its total life period is determined by the amount of radiation emitted by the sun, and once this reaches a certain point the sure-death line has been passed and extinction is inevitable. To compensate for this, alarms have been built in which alter the form of the organism and adapt it to living in a hotter radiological climate. Soft-skinned organisms develop hard shells, these contain heavy metals as radiation screens. New organs of perception are developed too. According to Whitby, though, it's all wasted effort in the long run—but sometimes I wonder."

He smiled at Coma and shrugged. "Well, let's talk about something else. How long have you known Kaldren?"

"About three weeks. Feels like ten thousand years."

"How do you find him now? We've been rather out of touch lately."

Coma grinned. "I don't seem to see very much of him either. He makes me sleep all the time. Kaldren has many strange talents, but he lives just for himself. You mean a lot to him, doctor. In fact, you're my one serious rival."

"I thought he couldn't stand the sight of me."

"Oh, that's just a sort of surface symptom. He really thinks of you continuously. That's why we spend all our time following you around." She eyed Powers shrewdly. "I think he feels guilty about something."

"Guilty?" Powers exclaimed. "He does? I thought I was supposed to be the guilty one."

"Why?" she pressed. She hesitated, then said: "You carried out some experimental surgical technique on him, didn't you?"

"Yes," Powers admitted. "It wasn't altogether a success, like so much of what I seem to be involved with. If Kaldren feels guilty, I suppose it's because he feels he must take some of the responsibility."

He looked down at the girl, her intelligent eyes watching him closely. "For one or two reasons it may be necessary for you to know. You said Kaldren paced around all night and didn't get enough sleep. Actually he doesn't get any sleep at all."

The girl nodded. "You . . ." She made a snapping gesture with her fingers.

" . . . narcotomised him," Powers completed. "Surgically speaking, it was a great success, one might well share a Nobel for it. Normally the hypothalamus regulates the period of sleep, raising the threshold of consciousness in order to relax the venous capillaries in the brain and drain them of accumulating toxins. However, by sealing off some of the control loops the subject is unable to receive the sleep cue, and the capillaries drain while he remains conscious. All he feels is a temporary lethargy, but this passes within three or four hours. Physically speaking, Kaldren has had another twenty years added to his life. But the psyche seems to need sleep for its own private reasons, and consequently Kaldren has periodic storms that tear him apart. The whole thing was a tragic blunder."

Coma frowned pensively. "I guessed as much. Your papers in the neurosurgery journals referred to the patient as K. A touch of pure Kafka that came all too true."

"I may leave here for good, Coma," Powers said. "Make sure that Kaldren goes to his clinics. Some of the deep scar tissue will need to be cleaned away."

"I'll try. Sometimes I feel I'm just another of his insane terminal documents."

"What are those?"

"Haven't you heard? Kaldren's collection of final statements about homo sapiens. The complete works of Freud, Beethoven's blind quartets, transcripts of the Nuremburg trials, an automatic novel, and so on." She broke off. "What's that you're drawing?"

"Where?"

She pointed to the desk blotter, and Powers looked down and realised he had been unconsciously sketching an elaborate doodle, Whitby's four-armed sun. "It's nothing," he said. Somehow, though, it had a strangely compelling force.

Coma stood up to leave. "You must come and see us, doctor. Kaldren has so much he wants to show you. He's just got hold of an old copy of the last signals sent back by the Mercury Seven twenty years ago when they reached the moon, and can't think about anything else. You remember the strange messages they recorded before they died, full of poetic ramblings about the white gardens. Now that I think about it they behaved rather like the plants in your zoo here."

She put her hands in her pockets, then pulled something out. "By the way, Kaldren asked me to give you this."

It was an old index card from the observatory library. In the centre had been typed the number :

96,688,365,498,720

"It's going to take a long time to reach zero at this rate," Powers remarked dryly. "I'll have quite a collection when we're finished."

After she had left he chucked the card into the waste bin and sat down at the desk, staring for an hour at the ideogram on the blotter.

Half-way back to his beach house the lake road forked to the left through a narrow saddle that ran between the hills to an abandoned Air Force weapons range on one of the remoter salt lakes. At the nearer end were a number of small bunkers and camera towers, one or two metal shacks and a low-roofed storage hangar. The white hills encircled the whole area, shutting it off from the world outside, and Powers liked to wander on foot down the gunnery aisles that had been marked down the two-mile length of the lake towards the concrete sight-screens at the far end. The abstract patterns made him feel like an ant on a bone-white chess-board, the rectangular screens at one end and the towers and bunkers at the other like opposing pieces.

His session with Coma had made Powers feel suddenly dissatisfied with the way he was spending his last months. *Goodbye, Eniwetok*, he had written, but in fact systematically forgetting everything was exactly the same as remembering it, a cataloguing in reverse, sorting out all the books in the mental library and putting them back in their right places upside down.

Powers climbed one of the camera towers, leaned on the rail and looked out along the aisles towards the sight-screens. Richocheting shells and rockets had chipped away large pieces of the circular concrete bands that ringed the target bulls, but the outlines of the huge 100-yard-wide discs, alternately painted blue and red, were still visible.

For half an hour he stared quietly at them, formless ideas shifting through his mind. Then without thinking, he abruptly left the rail and climbed down the companionway. The storage hangar was fifty yards away. He walked quickly across to it, stepped into the cool shadows and peered around the rusting electric trolleys and empty flare drums. At the far end, behind

a pile of lumber and bales of wire, were a stack of unopened cement bags, a mound of dirty sand and an old mixer.

Half an hour later he had backed the Buick into the hangar and hooked the cement mixer, charged with sand, cement and water scavenged from the drums lying around outside, onto the rear bumper, then loaded a dozen more bags into the car's trunk and rear seat. Finally he selected a few straight lengths of timber, jammed them through the window and set off across the lake towards the central target bull.

For the next two hours he worked away steadily in the centre of the great blue disc, mixing up the cement by hand, carrying it across to the crude wooden formes he had lashed together from the timber, smoothing it down so that it formed a six-inch high wall around the perimeter of the bull. He worked without pause, stirring the cement with a tyre lever, scooping it out with a hub-cap prised off one of the wheels.

By the time he finished and drove off, leaving his equipment where it stood, he had completed a thirty-foot long section of wall.

four

June 7 : Conscious, for the first time, of the brevity of each day. As long as I was awake for over twelve hours I still orientated my time around the meridian, morning and afternoon set their old rhythms. Now, with just over eleven hours of consciousness left, they form a continuous interval, like a length of tape measure. I can see exactly how much is left on the spool and can do little to affect the rate at which it unwinds. Spend the time slowly packing away the library ; the crates are too heavy to move and lie where they are filled.

Cell count down to 400,000.

Woke 8-10. To sleep 7-15. (Appear to have lost my watch without realizing it, had to drive into town to buy another.)

June 14 : 9½ hours. Time races, flashing past like an expressway. However, the last week of a holiday always goes faster than the first. At the present rate there should be about 4-5 weeks left. This morning I tried to visualise what the last week or so—the final, 3, 2, 1, out—would be like, had a sudden chilling attack of pure fear, unlike anything I've ever felt before. Took me half an hour to steady myself enough for an intravenous.

Kaldren pursues me like my luminescent shadow, chalked up on the gateway '96,688,365,498,702.' Should confuse the mail man.

Woke 9-05. To sleep 6-36.

June 19 : 8¾ hours. Anderson rang up this morning. I nearly put the phone down on him, but managed to go through the pretence of making the final arrangements. He congratulated me on my stoicism, even used the word 'heroic.' Don't feel it. Despair erodes everything—courage, hope, self-discipline all the better qualities. It's so damned difficult to sustain that impersonal attitude of passive acceptance implicit in the scientific tradition. I try to think of Galileo before the Inquisition, Freud surmounting the endless pain of his jaw cancer surgery.

Met Kaldren down town, had a long discussion about the Mercury Seven. He's convinced that they refused to leave the moon deliberately, after the 'reception party' waiting for them had put them in the cosmic picture. They were told by the mysterious emissaries from Orion that the exploration of deep space was pointless, that they were too late as the life of the universe is now virtually over !!! According to K. there are Air Force generals who take this nonsense seriously, but I suspect it's simply an obscure attempt on K.'s part to console me.

Must have the phone disconnected. Some contractor keeps calling me up about payment for 50 bags of cement he claims I collected ten days ago. Says he helped me load them onto a truck himself. I did drive Whitby's pick-up into town but only to get some lead screening. What does he think I'd do with all that cement? Just the sort or irritating thing you don't expect to hang over your final exit. (Moral : don't try too hard to forget Eniwetok.)

Woke 9-40. To sleep 4-15.

June 25 : 7½ hours. Kaldren was snooping around the lab again today. Phoned me there, when I answered a recorded voice he'd rigged up rambled out a long string of numbers, like an insane super-Tim. These practical jokes of his get rather wearing. Fairly soon I'll have to go over and come to terms with him, much as I hate the prospect. Anyway, Miss Mars is a pleasure to look at.

One meal is enough now, topped up with a glucose shot. Sleep is still 'black,' completely unrefreshing. Last night I took a 16 mm. film of the first three hours, screened it this morning at the lab. The first true horror movie, I looked like a half-animated corpse.

Woke 10-25. To sleep 3-45.

July 3 : 5½ hours. Little done today. Deepening lethargy, dragged myself over to the lab, nearly left the road twice. Concentrated enough to feed the zoo and get the log up to date. Read through the operating manuals Whitby left for the last time, decided on a delivery rate of 40 rontgenst/min., target distance of 350 cm. Everything is ready now.

Woke 11-05. To sleep 3-15.

Powers stretched, shifted his head slowly across the pillow, focussing on the shadows cast onto the ceiling by the blind. Then he looked down at his feet, saw Kaldren sitting on the end of the bed, watching him quietly.

"Hello, doctor," he said, putting out his cigarette. "Late night? You look tired."

Powers heaved himself onto one elbow, glanced at his watch. It was just after eleven. For a moment his brain blurred, and he swung his legs around and sat on the edge of the bed, elbows on his knees, massaging some life into his face.

He noticed that the room was full of smoke. "What are you doing here?" he asked Kaldren.

"I came over to invite you to lunch." He indicated the bedside phone. "Your line was dead so I drove round. Hope you don't mind me climbing in. Rang the bell for about half an hour. I'm surprised you didn't hear it."

Powers nodded, then stood up and tried to smooth the creases out of his cotton slacks. He had gone to sleep without changing for over a week, and they were damp and stale.

As he started for the bathroom door Kaldren pointed to the camera tripod on the other side of the bed. "What's this? Going into the blue movie business, doctor?"

Powers surveyed him dimly for a moment, glanced at the tripod without replying and then noticed his open diary on the bedside table. Wondering whether Kaldren had read the last entries, he went back and picked it up, then stepped into the bathroom and closed the door behind him.

From the mirror cabinet he took out a syringe and an ampoule, after the shot leaned against the door waiting for the stimulant to pick up.

Kaldren was in the lounge when he returned to him, reading the labels on the crates lying about in the centre of the floor.

"O.K., then," Powers told him, "I'll join you for lunch." He examined Kaldren carefully. He looked more subdued than usual, there was an air almost of deference about him.

"Good," Kaldren said. "By the way, are you leaving?"

"Does it matter?" Powers asked curtly. "I thought you were in Anderson's care?"

Kaldren shrugged. "Please yourself. Come round at about twelve," he suggested, adding pointedly: "That'll give you time to clean up and change. What's that all over your shirt? Looks like lime."

Powers peered down, brushed at the white streaks. After Kaldren had left he threw the clothes away, took a shower and unpacked a clean suit from one of the trunks.

Until this liaison with Coma, Kaldren lived alone in the old abstract summer house on the north shore of the lake. This was a seven-storey folly originally built by an eccentric millionaire mathematician in the form of a spiralling concrete ribbon that wound around itself like an insane serpent, serving walls, floors and ceilings. Only Kaldren had solved the building, a geometric model of $\sqrt{-1}$, and consequently he had been able to take it off the agents' hands at a comparatively low rent. In the evenings Powers had often watched him from the laboratory, striding restlessly from one level to the next, swinging through the labyrinth of inclines and terraces to the roof-top, where his lean angular figure stood out like a gallows against the sky, his lonely eyes sifting out radio lanes for the next day's trapping.

Powers noticed him there when he drove up at noon, poised on a ledge 150 feet above, head raised theatrically to the sky.

"Kaldren!" he shouted up suddenly into the silent air, half-hoping he might be jolted into losing his footing.

Kaldren broke out of his reverie and glanced down into the court. Grinning obliquely, he waved his right arm in a slow semi-circle.

"Come up," he called, then turned back to the sky.

Powers leaned against the car. Once, a few months previously, he had accepted the same invitation, stepped

through the entrance and within three minutes lost himself helplessly in a second-floor cul de sac. Kaldren had taken half an hour to find him.

Powers waited while Kaldren swung down from his eyrie, vaulting through the wells and stairways, then rode up in the elevator with him to the penthouse suite.

They carried their cocktails through into a wide glass-roofed studio, the huge white ribbon of concrete uncoiling around them like toothpaste squeezed from an enormous tube. On the staged levels running parallel and across them rested pieces of grey abstract furniture, giant photographs on angled screens, carefully labelled exhibits laid out on low tables, all dominated by twenty-foot-high black letters on the rear wall which spelt out the single vast word :

YOU

Kaldren pointed to it. "What you might call the supraliminal approach." He gestured Powers in conspiratorially, finishing his drink in a gulp. "This is *my* laboratory, doctor," he said with a note of pride. "Much more significant than your's, believe me."

Powers smiled wryly to himself and examined the first exhibit, an old ECG tape traversed by a series of faded inky wriggles. It was labelled : "Einstein, A.; Alpha Waves, 1922."

He followed Kaldren around, sipping slowly at his drink, enjoying the brief feeling of alertness the amphetamine provided. Within two hours it would fade, leave his brain feeling like a block of blotting paper.

Kaldren chattered away, explaining the significance of the so-called Terminal Documents. "They're end-prints, Powers, final statements, the products of total fragmentation. When I've got enough together I'll build a new world for myself out of them." He picked a thick paper-bound volume off one of the tables, riffled through its pages. "Association tests of the Nuremburg Twelve. I have to include these . . ."

Powers strolled on absently without listening. Over in the corner were what appeared to be three ticker-tape machines, lengths of tape hanging from their mouths. He wondered whether Kaldren was misguided enough to be playing the stock market, which had been declining slowly for twenty years.

"Powers," he heard Kaldren say. "I was telling you about the Mercury Seven." He pointed to a collection of type-

written sheets tacked to a screen. "These are transcripts of their final signals radioed back from the recording monitors."

Powers examined the sheets cursorily, read a line at random. "... BLUE ... PEOPLE ... RE-CYCLE ... ORION ... TELEMETERS . . ."

Powers nodded noncommittally. "Interesting. What are the ticker tapes for over there?"

Kaldren grinned. "I've been waiting for months for you to ask me that. Have a look."

Powers went over and picked up one of the tapes. The machine was labelled : "Auriga 225-G. Interval : 69 hours."

The tape read :

96,688,365,498,695

96,688,365,498,494

96,688,365,498,693

96,688,365,498,692

Powers dropped the tape. "Looks rather familiar. What does the sequence represent?"

Kaldren shrugged. "No one knows."

"What do you mean? It must replicate something."

"Yes, it does. A diminishing mathematical progression. A count-down, if you like."

Powers picked up the tape on the right, tabbed : "Aries 44R951. Interval : 49 days."

Here the sequence ran :

876,567,988,347,779,877,654,434

876,567,988,347,779,877,654,433

876,567,988,347,779,877,654,432

Powers looked round. "How long does it take each signal to come through?"

"Only a few seconds. They're tremendously compressed laterally, of course. A computer at the observatory breaks them down. They were first picked up at Jodrell Bank about twenty years ago. Nobody bothers to listen to them now."

Powers turned to the last tape.

6,554

6,553

6,552

6,551

"Nearing the end of its run," he commented. He glanced at the label on the hood, which read : "Unidentified radio source, Canes Vanatici. Interval : 97 weeks."

He showed the tape to Kaldren. "Soon be over."

Kaldren shook his head. He lifted a heavy directory-sized volume off a table, cradled it in his hands. His face had suddenly become sombre and haunted. "I doubt it," he said. "Those are only the last four digits. The whole number contains over 50 million."

He handed the volume to Powers, who turned to the title page. "Master Sequence of Serial Signal received by Jodrell Bank Radio-Observatory, University of Manchester, England, 0012-59 hours, 21-5-72. Source : NGC 9743, Canes Venatici." He thumbed the thick stack of closely printed pages, millions of numerals, as Kaldren had said, running up and down across a thousand consecutive pages.

Powers shook his head, picked up the tape again and stared at it thoughtfully.

"The computer only breaks down the last four digits," Kaldren explained. "The whole series comes over in each 15-second-long package, but it took IBM more than two years to unscramble one of them."

"Amazing," Powers commented. "But what is it?"

"A count-down, as you can see. NGC 9743, somewhere in Canes Venatici. The big spirals there are breaking up, and they're saying goodbye. God knows who they think we are but they're letting us know all the same, beaming it out on the hydrogen line for everyone in the universe to hear." He paused. "Some people have put other interpretations on them, but there's one piece of evidence that rules out everything else."

"Which is?"

Kaldren pointed to the last tape from Canes Venatici. "Simply that it's been estimated that by the time this series reaches zero the universe will have just ended."

Powers fingered the tape reflectively. "Thoughtful of them to let us know what the real time is," he remarked.

"I agree, it is," Kaldren said quietly. "Applying the inverse square law that signal source is broadcasting at a strength of about three million megawatts raised to the hundredth power. About the size of the entire Local Group. Thoughtful is the word."

Suddenly he gripped Powers' arm, held it tightly and peered into his eyes closely, his throat working with emotion.

"You're not alone, Powers, don't think you are. These are the voices of time, and they're all saying goodbye to you."

Think of yourself in a wider context. Every particle in your body, every grain of sand, every galaxy carries the same signature. As you've just said, you know what the time is now, so what does the rest matter? There's no need to go on looking at the clock."

Powers took his hand, squeezed it firmly. "Thanks, Kaldren. I'm glad you understand." He walked over to the window, looked down across the white lake. The tension between himself and Kaldren had dissipated, he felt that all his obligations to him had at last been met. Now he wanted to leave as quickly as possible, forget him as he had forgotten the faces of the countless other patients whose exposed brains had passed between his fingers.

He went back to the ticker machines, tore the tapes from their slots and stuffed them into his pockets. "I'll take these along to remind myself. Say goodbye to Coma for me, will you."

He moved towards the door, when he reached it looked back to see Kaldren standing in the shadow of the three giant letters on the far wall, his eyes staring listlessly at his feet.

As Powers drove away he noticed that Kaldren had gone up onto the roof, watched him in the driving mirror waving slowly until the car disappeared around a bend.

five

The outer circle was now almost complete. A narrow segment, an arc about ten feet long, was missing, but otherwise the low perimeter wall ran continuously six inches off the concrete floor around the outer lane of the target bull, enclosing the huge rebus within it. Three concentric circles, the largest a hundred yards in diameter, separated from each other by ten-foot intervals, formed the rim of the device, divided into four segments by the arms of an enormous cross radiating from its centre, where a small round platform had been built a foot above the ground.

Powers worked swiftly, pouring sand and cement into the mixer, tipping in water until a rough paste formed, then carried it across to the wooden formes and tamped the mixture down into the narrow channel.

Within ten minutes he had finished, quickly dismantled the formes before the cement had set and slung the timbers into the

back seat of the car. Dusting his hands on his trousers, he went over to the mixer and pushed it fifty yards away into the long shadow of the surrounding hills.

Without pausing to survey the gigantic cipher on which he had laboured patiently for so many afternoons, he climbed into the car and drove off on a wake of bone-white dust, splitting the pools of indigo shadow.

He reached the laboratory at three o'clock, jumped from the car as it lurched back on its brakes. Inside the entrance he first switched on the lights, then hurried round, pulling the sun curtains down and shackling them to the floor slots, effectively turning the dome into a steel tent.

In their tanks behind him the plants and animals stirred quietly, responding to the sudden flood of cold fluorescent light. Only the chimpanzee ignored him. It sat on the floor of its cage, neurotically jamming the puzzle dice into the polythene bucket, exploding in bursts of sudden rage when the pieces refused to fit.

Powers went over to it, noticing the shattered glass fibre reinforcing panels bursting from the dented helmet. Already the chimp's face and forehead were bleeding from self-inflicted blows. Powers picked up the remains of the geranium that had been hurled through the bars, attracted the chimp's attention with it, then tossed a black pellet he had taken from a capsule in the desk drawer. The chimp caught it with a quick flick of the wrist, for a few seconds juggled the pellet with a couple of dice as it concentrated on the puzzle, then pulled it out of the air and swallowed it in a gulp.

Without waiting, Powers slipped off his jacket and stepped towards the X-ray theatre. He pulled back the high sliding doors to reveal the long glassy metallic snout of the Maxitron, then started to stack the lead screening shields against the rear wall.

A few minutes later the generator hummed into life.

The anemone stirred. Basking in the warm subliminal sea of radiation rising around it, prompted by countless pelagic memories, it reached tentatively across the tank, groping blindly towards the dim uterine sun. Its tendrils flexed, the thousands of dormant neural cells in their tips regrouping and multiplying, each harnessing the unlocked energies of its nucleus. Chains forged themselves, latices tiered upwards into multi-faceted

lenses, focussed slowly on the vivid spectral outlines of the sounds dancing like phosphorescent waves around the darkened chamber of the dome.

Gradually an image formed, revealing an enormous black fountain that poured an endless stream of brilliant light over the circle of benches and tanks. Beside it a figure moved, adjusting the flow through its mouth. As it stepped across the floor its feet threw off vivid bursts of colour, its hands racing along the benches conjured up a dazzling chiaroscuro, balls of blue and violet light that exploded fleetingly in the darkness like miniature star-shells.

Photons murmured. Steadily, as it watched the glimmering screen of sounds around it, the anemone continued to expand. Its ganglia linked, heeding a new source of stimuli from the delicate diaphragms in the crown of its notochord. The silent outlines of the laboratory began to echo softly, waves of muted sound fell from the arc lights and echoed off the benches and furniture below. Etched in sound, their angular forms resonated with sharp persistent overtones. The plastic-ribbed chairs were a buzz of staccato discords, the square-sided desk a continuous double-featured tone.

Ignoring these sounds once they had been perceived, the anemone turned to the ceiling, which reverberated like a shield in the sounds pouring steadily from the fluorescent tubes. Streaming through a narrow skylight, its voice clear and strong, interweaved by numberless overtones, the sun sang . . .

It was a few minutes before dawn when Powers left the laboratory and stepped into his car. Behind him the great dome lay silently in the darkness, the thin shadows of the white moonlit hills falling across its surface. Powers free-wheeled the car down the long curving drive to the lake road below, listening to the tyres cutting across the blue gravel, then let out the clutch and accelerated the engine.

As he drove along, the limestone hills half hidden in the darkness on his left, he gradually became aware that, although no longer looking at the hills, he was still in some oblique way conscious of their forms and outlines in the back of his mind. The sensation was undefined but none the less certain, a strange almost visual impression that emanated most strongly from the deep clefts and ravines dividing one cliff face from the next. For a few minutes Powers let it play upon him,

without trying to identify it, a dozen strange images moving across his brain.

The road swung up around a group of chalets built onto the lake shore, taking the car right under the lee of the hills, and Powers suddenly felt the massive weight of the escarpment rising up into the dark sky like a cliff of luminous chalk, and realised the identity of the impression now registering powerfully within his mind. Not only could he see the escarpment, but he was aware of its enormous age, felt distinctly the countless millions of years since it had first reared out of the magma of the earth's crust. The ragged crests three hundred feet above him, the dark gulleys and fissures, the smooth boulders by the roadside at the foot of the cliff, all carried a distinct image of themselves across to him, a thousand voices that together told of the total time that had elapsed in the life of the escarpment, a psychic picture as defined and clear as the visual image brought to him by his eyes.

Involuntarily, Powers had slowed the car, and turning his eyes away from the hill face he felt a second wave of time sweep across the first. The image was broader but of shorter perspectives, radiating from the wide disc of the salt lake, breaking over the ancient limestone cliffs like shallow rollers dashing against a towering headland.

Closing his eyes, Powers lay back and steered the car along the interval between the two time fronts, feeling the images deepen and strengthen within his mind. The vast age of the landscape, the inaudible chorus of voices resonating from the lake and from the white hills, seemed to carry him back through time, down endless corridors to the first thresholds of the world.

He turned the car off the road along the track leading towards the target range. On either side of the culvert the cliff faces boomed and echoed with vast impenetrable time fields, like enormous opposed magnets. As he finally emerged between them onto the flat surface of the lake it seemed to Powers that he could feel the separate identity of each sand-grain and salt crystal calling to him from the surrounding ring of hills.

He parked the car beside the mandala and walked slowly towards the outer concrete rim curving away into the shadows. Above him he could hear the stars, a million cosmic voices that crowded the sky from one horizon to the next, a true

canopy of time. Like jostling radio beacons, their long aisles interlocking at countless angles, they plunged into the sky from the narrowest recesses of space. He saw the dim red disc of Sirius, heard its ancient voice, untold millions of years old, dwarfed by the huge spiral nebulae in Andromeda, a gigantic carousel of vanished universes, their voices almost as old as the cosmos itself. To Powers the sky seemed an endless babel, the time-song of a thousand galaxies overlaying each other in his mind. As he moved slowly towards the centre of the mandala he craned up at the glittering traverse of the Milky Way, searching the confusion of clamouring nebulae and constellations.

Stepping into the inner circle of the mandala, a few yards from the platform at its centre, he realised that the tumult was beginning to fade, and that a single stronger voice had emerged and was dominating the others. He climbed onto the platform, raised his eyes to the darkened sky, moving through the constellations to the island galaxies beyond them, hearing the thin archaic voices reaching to him across the millenia. In his pockets he felt the paper tapes, and turned to find the distant diadem of Canes Venatici, heard its great voice mounting in his mind.

Like an endless river, so broad that its banks were below the horizons, it flowed steadily towards him, a vast course of time that spread outwards to fill the sky and the universe, enveloping everything within them. Moving slowly, the forward direction of its majestic current almost imperceptible, Powers knew that its source was the source of the cosmos itself. As it passed him, he felt its massive magnetic pull, let himself be drawn into it, borne gently on its powerful back. Quietly it carried him away, and he rotated slowly, facing the direction of the tide. Around him the outlines of the hills and the lake had faded, but the image of the mandala, like a cosmic clock, remained fixed before his eyes, illuminating the broad surface of the stream. Watching it constantly, he felt his body gradually dissolving, its physical dimensions melting into the vast continuum of the current, which bore him out into the centre of the great channel sweeping him onward, beyond hope now but at rest, down the broadening reaches of the river of eternity.

As the shadows faded, retreating into the hill slopes, Kaldren stepped out of his car, walked hesitantly towards the concrete

rim of the outer circle. Fifty yards away, at the centre, Coma knelt beside Powers' body, her small hands pressed to his dead face. A gust of wind stirred the sand, dislodging a strip of tape that drifted towards Kaldren's feet. He bent down and picked it up, then rolled it carefully in his hands and slipped it into his pocket. The dawn air was cold, and he turned up the collar of his jacket, watching Coma impassively.

"It's six o'clock," he told her after a few minutes. "I'll go and get the police. You stay with him." He paused and then added: "Don't let them break the clock."

Coma turned and looked at him. "Aren't you coming back?"

"I don't know." Nodding to her, Kaldren swung on his heel and went over to the car.

He reached the lake road, five minutes later parked the car in the drive outside Whitby's laboratory.

The dome was in darkness, all its windows shuttered, but the generator still hummed in the X-ray theatre. Kaldren stepped through the entrance and switched on the lights. In the theatre he touched the grilles of the generator, felt the warm cylinder of the beryllium end-window. The circular target table was revolving slowly, its setting at 1 r.p.m., a steel restraining chair shackled to it hastily. Grouped in a semi-circle a few feet away were most of the tanks and cages, piled on top of each other haphazardly. In one of them an enormous squid-like plant had almost managed to climb from its vivarium. Its long translucent tendrils clung to the edges of the tank, but its body had burst into a jellified pool of globular mucilage. In another an enormous spider had trapped itself in its own web, hung helplessly in the centre of a huge three-dimensional maze of phosphorescing thread, twitching spasmodically.

All the experimental plants and animals had died. The chimp lay on its back among the remains of the hutch, the helmet forward over its eyes. Kaldren watched it for a moment, then sat down on the desk and picked up the phone.

While he dialled the number he noticed a film reel lying on the blotter. For a moment he stared at the label, then slid the reel into his pocket beside the tape.

After he had spoken to the police he turned off the lights and went out to the car, drove off slowly down the drive.

When he reached the summer house the early sunlight was breaking across the ribbon-like balconies and terraces. He

took the lift to the penthouse, made his way through into the museum. One by one he opened the shutters and let the sunlight play over the exhibits. Then he pulled a chair over to a side window, sat back and stared up at the light pouring through into the room.

Two or three hours later he heard Coma outside, calling up to him. After half an hour she went away, but a little later a second voice appeared and shouted up at Kaldren. He left his chair and closed all the shutters overlooking the front courtyard, and eventually he was left undisturbed.

Kaldren returned to his seat and lay back quietly, his eyes gazing across the lines of exhibits. Half-asleep, periodically he leaned up and adjusted the flow of light through the shutter, thinking to himself, as he would do through the coming months of Powers and his strange mandala, and of the seven and their journey to the white gardens of the moon, and the blue people who had come from Orion and spoken in poetry to them of ancient beautiful worlds beneath golden suns in the island galaxies, vanished forever now in the myriad deaths of the cosmos.

J. G. Ballard

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