

ENHANCEMENT

A COLLECTION OF
SHORT STORIES

NED STEPHENSON

Enhancement

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*Modification of form is admitted to
be a matter of time.*

—Alfred Russel Wallace

DEDICATION

To Lauren, for making it happen.

Sequence 1

New South Wales, 1995

Thomas Ramsay was six years old when a car hit him outside his home. His soccer ball had sailed over the stone wall and little Tom was out the filigreed wrought-iron gate and on the road before the driver had time to react.

It was touch and go as Tom spent a month in an induced coma while the doctors waited for the swelling in his brain to subside. His parents braced themselves for a life of care for the third of their four children, and his mother never left the hospital in all those weeks. The little boy regained consciousness hours before the doctors planned to intervene, and apart from having no memory of the incident, he quickly made a full recovery. It wasn't until five years later that it became obvious the accident had changed him.

Tom grew to be a kid who loved being outdoors. Exploring the bush and collecting creatures, digging in

the soil, catching beetles, watching wasps catch spiders and entomb them alive for their young to eat later, observing nature in all its wonderful and gory details, made Tom happy. His younger brother was different; Marcus enjoyed pulling engines apart and learning how the pieces worked. Tom's older sisters were both social creatures, more drawn to making people do what they wanted than paying any attention to objects around them.

But not Tom: for him it was alone and outdoors in the sunshine, searching for things to catch. The only shared trait with his three siblings was the family intelligence. Tom was brilliant, and he found school a breeze: one of those people who never seemed to have to try to remember things. We have all met people like that.

The delayed consequence of Tom's roadside accident finally revealed itself in his eleventh year. Puberty came a little earlier for Tom than for his schoolmates, but that wasn't alarming. He grew and ate like a horse, as boys do when they have growth spurts; however, Tom's went on much longer than his peers. For two years, his mother struggled to keep the food up to him, and by his thirteenth birthday Tom had the dimensions of a tall and fully grown man. His few friends at school had loved it, and both the rowing and football coaches were in his ear about joining their top squads. But Tom wasn't interested in sport, apart from riding his bike, because he could do that alone. For his thirteenth birthday he asked his parents for a high-powered microscope rather than football boots.

Mrs Ramsay grew anxious about Tom's unusual growth, so she took her son to a series of doctors for specialist tests. Eventually, the brain surgeon who had cared for Tom after his accident asked to meet with Mrs Ramsay alone at his practice.

'Sarah, Tom's pituitary gland is damaged. The trauma to his brain from hitting the road when struck by that car all those years ago has changed how the gland works. It doesn't know when to switch off producing its growth hormone.'

'Meaning what?' his mother asked, because she did not understand about pituitary glands and assumed the stuff that made her son grow came from his balls.

'Well, it may stop on its own accord. I can't predict whether that will happen. But if it doesn't, then he may reach a height of seven feet or more. With all the health risks and living problems that come with such an extreme size. Sarah, your son has the signs of developing gigantism.'

Mrs. Ramsay curled her lip at the description of her boy.

'I recommend we put him on a course of growth inhibitors. They work well with others in a similar condition. It's uncommon, but people can get tumours on their pituitary gland that will have the same effect. Receiving it from trauma, as in Tom's case, is rare ... but not unheard of.'

By introducing a suite of inhibitor chemicals to combat the hormones flooding Tom's body, they slowed his out-of-control growth. His adolescence reverted to the closest thing you or I might call normality—apart

from being a foot taller than anyone else in the family by the time he finished school.

The second, less important—but still interesting—element to Tom Ramsay's life was that he was born into a wealthy family where both sides had built their fortune from manufacturing. His father's family were heavy machinery people and his mother's rich from ceramics—not the culinary type, but electrical insulators and industrial porcelain. Both arms of the family tree shared a tradition that each child would enter a field that contributed to the family businesses.

But Tom had absolutely no desire to be a part of the family companies.

He struggled to even be a part of the family. Holiday gatherings, trips to overseas resorts, and family birthdays all bored him; he felt out of place. His parents tolerated his passion for nature and his desire to be alone, hoping the phase would eventually burn out. And besides, his stellar school marks and a prized university scholarship gave him respite from his parent's disinterest in his passions.

His siblings paid no attention to Tom's departure from tradition; they had enough on their plates dutifully living up to familial expectations by becoming engineers and manufacturers.

Regardless of Tom's physical presence around people, he never had a serious girlfriend at university—not for want of girls trying—and he quietly made his way through an undergraduate science degree, finishing his honours year in microbiology with a perfect grade point average and the University Medal.

Tom's parents brought proud faces to the graduation ceremony but kept their view that his intelligence would be better applied to the manufacturing world and not on an obscure science. Towards the end of his honours year, five research professors were chasing Tom. In the end he chose two: the first a microbiologist, and his supporting professor would be an organic chemist.

And so, at six foot eight inches, two hundred and seventy pounds and the tender age of twenty, Tom Ramsay began his doctoral degree.

* * *

Tom was fascinated by animal–algae symbiosis, especially the type that occurred in coral, so this was why he chose a microbiologist for his supervisor. He found the relationship intriguing between the polyp, the soft fleshy animal part of the coral, and the tiny algae that live *inside* the cells of the polyp. That the strain of algae in the coral had the cool, other-worldly name of *zooxanthellae* was a pleasant bonus for him.

There were a few examples of symbiosis in nature available for Tom to research, but he imagined this coral–algae connection particularly significant; he sensed it held the key to something greater than two different life forms living together for mutual benefit. It was well known these creatures had been locked in this relationship for so many millions of years that they could now no longer live apart. Tom wanted to understand how they did it; one getting its energy from sunlight, the other from eating plankton during the hours of darkness. They enjoyed

the two worlds, like nature's version of Jekyll and Hyde, without the murderous consequences. The question of why nature wasn't filled with countless examples like this he took to his supervisor.

Contrary to the typical image of a university professor, Tom's supervisor was a neat man. The shelves of James Wright's room looked well-ordered, practically empty, and his office furniture was a simple IKEA desk and chair. The only luxury in the room was a linen couch to 'cook up ideas', James told his students. Tom translated this into 'somewhere for the lazy fifty-something professor to sleep in the afternoon'.

* * *

'Have you picked a research topic?' Professor Wright asked Tom. 'The last time we met, you were throwing around a few options. How'd you go?'

Tom was using the couch for its intended purpose and lay its full length with his feet hanging off the end. He was used to not fitting furniture. He felt familiar and relaxed around Professor Wright, a man who encouraged students to be themselves, so it didn't seem to be rude lying down while being addressed.

'I want to look into the symbiosis between algae and marine animals.'

Wright nodded his approval because his specialty research had been marine invertebrates. He was on solid ground here.

'Good! You've got a few options; tridacnids, cephalopods, ulmarids ...'

‘I thought corals.’

‘Cnidaria! Fair enough, that’s probably the one I’d pick. Loads of prior research to build upon and easy because the critters stay still.’ The professor eyed his reclining student with interest. ‘Have you chosen corals so you can spend all your time diving around the Great Barrier Reef getting a tan?’

Tom stared up at the ceiling. ‘No, I’m happy to keep specimens in tanks on campus.’

Early on, James Wright realised this latest super-sharp student didn’t share his sense of humour. He didn’t appear to have much humour in him at all. *The brilliant ones are weird*, Wright thought to himself, *only so much intelligence can squeeze into a person until there’s no room left for the more social traits.*

‘Good for you, Tom. Come back with a research proposal and then it’s time to start the literature review.’

* * *

Tom’s proposal was approved by the academic senate without challenge. Cash wasn’t an issue for Tom, so he bought a multitude of tanks and corals from specialist pet suppliers, and he set about probing into the form and function of the two organisms joined as one. By halfway through his first year, he’d isolated the algae and had kept it alive away from the host organism. No-one had ever done this before. Perhaps they hadn’t tried.

To achieve this, Tom had created a blend of nutrients the algae normally received from the polyp, and the

algae seemed content alone from its friend, with enough sunlight and a suitable rich solution to live in. Wright was impressed with the quick results and encouraged Tom to probe into how the polyp might survive without the algae, because so far Tom had killed every coral that lost its symbiotic partner.

But it was here that Tom drifted from his original course; he'd had a new and far more exciting idea. Now that he had the algae, he wanted to put it in other creatures; find out whether it would coexist in something else, whether it would develop a whole new symbiosis. So far, he had not had any luck finding examples in the literature where this had been successful or even attempted. Of course, that only made him more determined to follow this fresh line of investigation.

Another PhD student in his first year, with the same supervisor, struck up a friendship with Tom during those early months. Luke Pearson had been researching ways to prevent leather being attacked by fungi while in long-term transit, such as when bringing leather products from Europe to Australia. Luke dreamed of working for fashion importers when he'd finished his doctorate. He'd get to go to Italy and chat up Italian girls as he drank espressos in the Piazza dei Mercanti. Luke was adamant that calling himself *dottore* would help the cause, hence his desire for the postgraduate degree. Tom was smarter than him, but Luke thought his mate's research was a complete waste of time that would only lead to a stuffy life cooped up in a university doing inane research until the end of his days.

Not that future for Luke; oh no, he wanted to do something practical with his doctorate, like make money or be famous. He suspected the second possibility unlikely, so set his mind to chasing the money angle. Perhaps it was because they were peculiar people that they got on so well, or that they were the only two microbiology doctoral students that year.

To test the waters on the new direction for his research, Tom shared his idea of making a new symbiosis with Luke.

* * *

‘You need to drop that before it’s a fixation! Wright’s not the type of guy to stick his neck out.’ Luke watched his friend stare out the window.

‘Go on with what you’re already doing and get it finished, hang the fancy degree on the wall, and then chase the crazy crap later when you’re a cardigan-wearing professor.’

Tom had always been poor at reading people. The absence of a girlfriend resulted from him being incapable of recognising signals that interested girls would send his way. To his flatmates, Tom was dislocated from the world around him. It made him a pleasant person to live with. He paid his rent and left them alone.

Tom kept watching the lemon-scented gums sway outside the cafeteria near the science buildings. He hadn’t expected Luke to not like his idea.

‘Too late. I mentioned it at the last progress meeting. I told the panel they should allow me to use human cells in my experiments.’

'Why the hell did you say that?'

'Because I think a human immune system will accept the algae if I put an inhibitor in place. Like what they used to control my growth as a kid.'

'That's dumb.'

'I don't think they understand what I can do with this symbiosis.'

'They're not idiots!' Luke sniffed. 'Wright may not be the most exciting dude around but, let's be frank, mate, neither are you. Why do you want to do this with people?'

Tom hadn't moved his eyes from the trees.

'Wouldn't you like to get energy directly from the sun?'

'No ... why the hell would I?'

Tom turned to face his friend; his eyes were red from lack of sleep.

'Don't you get it? If our bodies photosynthesised, we would eat less. We wouldn't put so much pressure on farming land, there'd be less waste, fewer landfills, less fighting over food, no hunger and starvation in the world.'

Luke had never considered Tom to be a humanitarian. His version of Tom didn't appear to care much about humanity. Why the sudden interest?

'What a fantasy! Do you want to save the world by turning us into little green men?'

Tom frowned. 'If I make this work, we'll be capable of getting our own energy directly from the sun. It would be like the branching between *Homo sapiens* and Neanderthals!'

Luke rolled his eyes and tried to talk some sense into his friend.

He failed.

* * *

Tom ignored Luke and pushed on with his new direction. Later that week, he squirmed on his supervisor's couch.

‘That’s what I’d like to investigate: a way to create a new symbiosis. I’ve thought about this since school. I’ve always wondered why we can’t do it.’

‘But there aren’t any algae in or on our skin, Tom—not unless you’ve been swimming in a putrid waterhole. The only things we have in our skin that isn’t us are things like fungi, viruses, and bacteria around hair follicles and in sweat glands.’

‘I know that ... I’d still like to test if it’s possible to implant microalgae into human skin cells.’

Wright threw his head back and laughed. ‘What ... so people could photosynthesise like plants?’ The professor shook his head. ‘That’s way too big, Tom; that’s fantasy or postdoc work. You can try something new after you’ve completed your degree. I’ll remind you, my young inspired genius, the purpose of gaining a doctorate is to gain entry to the club. Once you’re in, you can do whatever you please. Until then, don’t be a revolutionary. Don’t look at me like that ... you know that’s how the system works.’

Tom got up off the couch because he sensed a practised speech coming.

‘You need to go through the process and satisfy the markers and then you can do what you want afterwards. We must have a research field that I and Trevor are both knowledgeable in. What you’re talking about is completely new. Doctoral research is about building on

the known—it's not about finding new stuff.' Wright took a drink from his can of Coke and shook his head again. 'Besides, you're introducing too many variables for a simple research subject.'

Then Wright watched yet another frustrated student leave his office, like every other one had at some stage in their research. Holding the postgrad's hand was part of the supervisor's job, but it missed out being written into academic position descriptions.

Wright called out to him. 'Besides, you've stuff-all chance the academic senate would give you permission to use human subjects!'

* * *

In the laboratory, Tom stewed as he pipetted solutions between dishes, an unskilled task that required little thought but had to be done carefully. He was pissed off his idea had been dismissed offhandedly.

From dish to dish his arm moved, then back to the beakers with the solutions. His mind wasn't on the task and he could still see the look on Wright's face. He'd found a fantastic direction to go after, but no-one seemed to agree. It felt like being inside a cave and the light was vanishing as a boulder rolled across the entrance. When he tapped the side of the dish and dropped solution on the bench he swore and put the pipette down. It was then he noticed a red mark across his knuckles, he'd no idea how it had got there, but seeing it made him stop what he was doing. Just a superficial cut, probably from brushing against a sharp edge somewhere in the laboratory.

It looked like a cat scratch. He turned his hand in the light, thinking about the layers that made up the barrier between him and the outside world. Tom tried to imagine his sight magnifying until he separated the dermis and the sweat glands, the follicles and the fatty hypodermis. He thought of the layers; stratum corneum, stratum lucidum, stratum granulosum ...

He pushed his stool away from the bench so hard it fell to the ground and he didn't stop to pick it up as he left the lab, returning shortly with a fine needle and syringe.

He chose a spot on the inside of his forearm because a long sleeve would hide it and it would be easy for him to check. The tiny needle slid beneath the skin as Tom pressed the plunger to administer the 0.5mL solution containing the algae. A sting and a faint patch appeared the size of a small fingernail under the skin. It only looked like an old bruise. Heart now racing, Tom quit lab work for the day and went home.

* * *

It was a restless sleep that evening for Tom, plagued by dreams of him mutating into a giant sponge and being rooted to the ground, unable to move and left to dry in the sun. He woke around two in the morning with with the bedsheets soaked and pins and needles in the arm he'd been sleeping on. When he rolled over to allow the blood to circulate, the numbness was replaced by a searing pain all the way to his neck.

Turning on his bedside light, Tom saw the puncture area on his arm was surrounded by red inflamed skin that

had risen like an ant bite. From the red halo, thin lines traced towards his elbow. The injection spot had become infected and the surface of his arm was hot to the touch. He didn't need to take his temperature; he could tell that it was roaring.

* * *

Arriving at the hospital by taxi, Tom waited an age before someone saw him. Outpatients had the usual Saturday-night collection: drunks injured from fights and drugged people who had hurt themselves or been hurt by others. The underbelly of humanity that medical practitioners clean for us while we sleep. It was the worst imaginable time for him to be at a city hospital that covered a district of fifty thousand people, but his shaking and fever needed attention and couldn't wait until after the weekend.

A doctor who finally appeared was a young condescending asshole whose response to Tom's statement when he said he had an infection was merely, 'What makes you think that?'

After Tom exposed his forearm, the arrogance subdued enough for the quack to agree without needing to inspect the affected area. Already exhausted from a fourteen-hour shift, he gave Tom a shot of penicillin and a script for antibiotics that could be filled at the hospital pharmacy. Tom was relieved the doctor hadn't investigated the puncture and green bruise where the algae was under his skin attacking his body.

* * *

‘Seriously, Tom—what did you expect?’ was the limit of Luke’s sympathy on Monday. ‘Did you suppose your immune system would just say “Hi, foreign plants; welcome to my body. Make yourselves at home”?’ Tom pulled his sleeve down to cover the war zone. It still hurt, but the redness had shrunk since the weekend and his temperature was back to normal. ‘You, of all people, should know about mycotoxins. Damn lucky you didn’t give yourself septicaemia.’ His body’s reaction to the foreign life had got Tom thinking for the rest of the weekend.

‘Tell me more about how you treat the leather.’

Luke eyebrows lifted at this change in direction. His mate hadn’t shown a great deal of interest in his own research before. They spent most of their time together only talking about Tom’s studies or about wine, which was the only other interest they shared.

‘What do you care about fungi and leather?’

‘I have to mask the antigen ... to make my immune system not recognise the algae as a foreign body and set off this kind of auto-response. How do you prevent the leather being attacked?’

‘It’s different. Fungi is nothing like algae, and the skin I work with has been dead for ages.’

‘Tell me anyway.’

Luke explained what his study involved as Tom listened intently. By the time he’d exhausted Luke’s knowledge, Tom agreed that next time he did an experiment, he’d use a clinical environment instead of his body as the testing ground.

* * *

It was harder than Tom had expected. It took another four months before he'd developed inhibitors to the point of being able to test them. During that time his relationship with Wright had deteriorated where they now communicated only by writing. Tom was obsessed with his new direction and couldn't care less about the doctorate anymore; he saw a whole original line of success.

Luke didn't mind. He remained patient with his mate because his own research had been plodding along nicely, and he'd started informal Italian lessons with a cute undergraduate from Rome, a deliciously sexy distraction from Tom's obsession.

On the twentieth of December, Tom was in the laboratory on the second floor of the principal biology building at the university. He'd positioned Petri dishes on warming plates and into each he'd placed some of his own skin cells in a saline solution. That morning he'd painstakingly injected into the skin cells the microalgae he'd been growing especially for the occasion.

Next, he added liquid inhibitors to each dish, complex chemicals he'd been working on for the past week, developed in a way similar to immunosuppressants used to prevent organ rejection in transplant patients. Each dish contained a slightly different inhibitor, or differing concentrations of the same inhibitor. By late afternoon, Tom had an array of a hundred dishes carefully laid out in a grid and labelled accordingly.

There had never been room in his scientific mind for an image-of-man creator and yet, as he lay in bed that night looking up at the floral pressed metal ceiling in his bedroom, he spoke a soft prayer that his experiment might work. When he'd finished, he added a promise to go to church if it would make any difference to the outcome.

* * *

The next day Tom rose at dawn. He was too excited to stay in bed and keen to find out how his tests had gone overnight. He skipped breakfast and, dropping some apples into his pack, took his Italian road bike off its hooks in the hall and carried it down the house steps and out the narrow front gate to the road.

With virtually no traffic in the early morning light, it would be a fast ride to the university. His mind buzzed with the thrill of seeing what had happened. He needed to get in quick to find out, and to make sure no-one messed with the dishes.

Chilly air instantly hit his face as his muscular legs eased into a swift cadence. Living close to the university meant Tom had never bought a car, and he'd ridden every day for the last five years. He even rode most weekends, sometimes over a hundred kilometres at a stretch, and always on his own. His parents approved of the riding, so they had bought him a premium bike that had cost the same as a hatchback car. With legs the size of his, Tom used it to its potential. Between the rental he shared with some younger students and the campus there were few hills, so he easily reached the same speed as the traffic.

He didn't have to think; his legs took control, his body leaned into the corners, his hands rested lightly on the handlebars. That morning he felt like a stone skimming on water.

* * *

The driver felt the collision through his steering wheel and heard the cyclist rumble over his roof. Sliding to a stop on the other side of the intersection, the driver got out and ran back, seeing other vehicles slowing as he went to the middle of the road. On the bitumen in the early light lay a large fit-looking man in dark Lycra, arms and legs grazed and starting to bleed, with a wrist fractured from the impact.

But it was the head and neck that made the driver not touch the injured man when he bent down to check if he was conscious. The helmet was split in half down the centre, a white bone jutted from the man's shoulder, and his neck was unnaturally twisted. The driver shouted across the intersection for an ambulance as other people got out of their cars.

It took ten minutes before paramedics arrived at the accident. Even if they had got there in one, there wasn't anything they could have done to help Tom. The impact as he hit the road had broken his neck, killing him instantly. This time around, Tom hadn't been so lucky with a car.

* * *

Luke Pearson didn't learn about the death of his friend until that evening. He, too, had come in early to see how Tom's clandestine experiment was progressing, and he had waited for an hour, and then gone about his business figuring Tom was waylaid and would seek him out when he got in. By mid-morning, Luke was impatient and thought he'd look for himself.

What he noticed on the dishes in the laboratory were groups of human skin cells floating peacefully in their warm solutions. He took a crowded dish over to a binocular microscope and, after correcting the focus, he saw the cell walls full of living microalgae that hadn't only survived the night but were happily multiplying in the sunshine as it streamed through the window.



Sequence 2

North-east USA, 2005

There was no reason to imagine the road led anywhere interesting—only a pair of wheel tracks with thick grass between them, the lines curving into a healthy forest of sugar maple, beech, and yellow birch that grew so dense you couldn't see further than thirty yards either side of the track. Hawthorn and pin cherry added colour to the taller trees and the deep carpet of leaves rustled as you walked through the forest. In the warm months, the call of cedar waxwings dominated all other sounds. Where the track met the tarred road, there was no signpost with a number or name telling what may be down the lane, or even how far the road went. The road was so insignificant, surveyors hadn't bothered to gazette it on government maps.

Only the people who worked at the end of the road knew what was there, but they seldom left the facility. Instead, supplies were brought in once a week under the cover of darkness, and during winter when the forest

was heavy with snow, the deliveries reduced to once a fortnight. The sylvan world quarantined the facility at the end of the road from the rest of the country.

The local sheriff suspected something wasn't right, but a visit to his house by men holding national security clearances was enough deterrent for him to reconsider investigating, even in an emergency. *This is way above your pay grade, sheriff.*

The road led to a spiral-shaped complex of grey state-of-the-art buildings with walls of polished concrete and heavily tinted windows, looking like it was designed by an overpriced architect and created for someone who had far too much money, like a reclusive billionaire or a drug lord. But this wasn't the coca hills of Colombia, this was Vermont, and there weren't any billionaires living in this part of the Triumph State Forest.

Half-buried between the trees, the buildings varied in size with the largest having many rooms, but only a handful of occupants. Placed in a series of halos around the camp was the most advanced security imaginable, motion and thermal sensors of a sophistication only found in the military. There were no designations anywhere on the outside of the structures, and only when you got inside did you observe the institution's name. The heavenly title *SERAPH* was emblazoned along passageways and plaques in the larger theatres and meeting areas. The Administration, the organisation that owned the facility, had a business vision to create angels.

SERAPH

Symbiotic Generation by Photosynthesis.

In the middle of the largest building, a young woman dressed in light blue pants and a short-sleeved shirt of matching colour padded down a fluorescent-lit corridor. Her sneakers were enclosed in operating theatre covers and her short hair tucked inside a bouffant cap. She passed through a double-sided door after running her security tag across a reader and resting her right eye against a retinal sensor. Less than a year ago, she'd joined the research centre, bringing with her two master's degrees and a doctorate, all in biomedical research. But even with her impressive collection of degrees, she was only a junior staffer at SERAPH.

After passing through another set of doors, the woman arrived at the main laboratory, where a man in his early thirties was hunched over a microscope.

'Hi, Luke.'

The man looked up and smiled. 'Rachel.'

'Seen any change since yesterday?'

Rachel collected a fresh lab coat from a row of hooks on the wall.

'Not in the algal count. You can tell Charles they appear to have stabilised. But come and have a look at this.'

Slipping her coat over the theatre clothes, Rachel followed the senior microbiologist to another desk where computer monitors were set up side by side. One was permanently connected to a microscope so several people could view a specimen simultaneously, while the other

usually displayed graphs or tables of readings. Today, on the second screen a video displayed a small room that looked like a dormitory cell. It was surveillance footage covering the same room from different angles, designed so there would be no blind spots.

‘I didn’t know you had access to the cameras.’

Luke Pearson took control of the monitor and rewound the video until the time-stamp in the top right read *A7 02:15* and then ran the recording. The picture showed a muscular man dressed only in white shorts and covered in small bruises. They watched him lean against a wall and do standing push-ups before he dropped to the ground so he could do a handstand and then vertical push-ups.

Rachel sensed Luke was waiting for her to say something.

‘A7 is getting strong again! He’s recovered from the operation quickly,’ she said.

‘That’s not the point. Don’t you think it strange?’

‘Not really ... one reason they picked him was because of his stamina.’

‘But he’s exercising at two in the morning!’

Rachel couldn’t see what was so interesting. ‘Maybe he’s bored shitless.’

Luke frowned. ‘It doesn’t worry you guys he hasn’t slept for six days?’

* * *

Later that day, the same man—designated A7—lay on a chair outside in the clear summer light.

As he bathed, his skin tingled with an orgasmic rush coursing up into his brain. It was fantastic to be in the sunlight again; when they locked him indoors he became claustrophobic, anxious like a pacing tiger.

Beside his yard there was a man of similar age. Between them rose a thick Perspex screen ten feet high, with a clear roof, so that each yard was, in reality, a transparent cube. Past his neighbour were other enclosures, each containing a solitary man. Occasionally A7 had got the attention of his neighbour, A6, but the men couldn't hear each other well. With sign language and shouting he learned they were all undergoing a similar treatment, and he wanted to know if they were experiencing the same things as him.

He sensed they weren't. Three days ago, a man collapsed in a yard far off near the edge of the forest, never to return. And his neighbour A6 had far fewer injection points around his body than A7. That made sense, he thought. Each of us must be on a different trial.

At least for A7 the headaches and muscle spasms were easing. Not the nausea though—that still reared its head several times a day, like recurring indigestion that would not leave him. There were lots of meds: pills and injections to aid in the recovery and prevent rejection of the algae implanted throughout his skin. His body was an experiment to see whether people could photosynthesise, the injection sites spreading further the more time he spent in the sun.

A7 wondered if maybe that other guy had had a violent immune response. He'd been told that was a risk when he agreed to the tests. Given the choice between

death by lethal injection or the opportunity to continue living, he chose life. He was willing to take the chance that there could be nasty side effects, or even death. But he believed these doctors weren't trying to kill people; instead, they were trying in some weird way to strengthen him. At the time it sounded like a fair risk to take—not that he'd had much choice.

Apart from moments in the sunshine, the only pleasure in this restricted life were visits from the cute doctor with the short blonde hair. If he wasn't stuck inside this weird place, he'd have asked her out, and when they finally released him, he would find out her name. He imagined her entire body shaved under her scrubs, because he liked his girls that way: young and smooth. It was girls that had gotten him into jail.

A7 knows he hasn't slept, but he doesn't want to, and he's only eating a small meal every second day, but he's not hungry. Just the opposite—he's bursting with energy and wants to run everywhere, but there's no space. It's making him irritable and fidgety.

It's been a fortnight since they had administered the genetically changed synthetic algae to his body, and so far, everything pointed towards it having been a success. He just wished he didn't feel so sick in the stomach.

* * *

'A7?'

The sunbathing man opened his eyes to see the cute girl standing in front of him again.

'Yes, doc?'

‘How would you like to use the gym equipment? I’ll show you the way now.’

The man happily followed her from the enclosure, and along a corridor he’d never seen. They passed security doors and cameras; someone was always watching him, just like prison all over again.

The gym was small and not what he expected when compared to how high-tech everything else was at the facility. He saw all the gear he could wish for crammed in a room as though the equipment had been an after-thought. She asked which he would like to use first and A7 chose the rowing machine.

As the man strapped in his feet, Rachel attached soft cloth ECG electrodes to his chest at various points. His nostrils flared at her smell.

He had noticed that either the surgery or the meds heightened this sense; there were parts of her that smelled different and he could distinguish them from each other. It would have been nice to have had this sense before in the outside world. The doctor commented on his elevated pulse before he’d even started.

‘Keen to get moving, doc.’ His skin tingled at her smile.

Then he got stuck into the exercise, letting the days of frustration flood out.

After covering ten kilometres in under half an hour with a minor change in his heart rate, he moved onto the stationary bike. It was time for Rachel to measure his oxygen intake.

* * *

Luke's desk phone rang beside him.

'Pearson.'

'Luke, come down to the gym for a moment. I've got A7 on the bike ... you have to see this. His VO₂ is reading 91, for God's sake! There'd only be a handful of men in the entire country who would be higher.'

'What was he before?'

'Before enhancement? His VO₂ was 75.'

Luke stopped what he was doing and left the lab.

Caught up in their drive to collect information and take as many readings as they could, the researchers let A7 push himself too far. While on the treadmill, he slipped and before he could get clear of the abrasive belt, it had scraped a long length of skin from his thigh. It was startling how little the graze bled.

They wrapped the abrasion in gauze and A7 returned to his cell with a mild sedative to ease his growing agitation. The attention embarrassed him for a wound that looked minor and didn't hurt at all. The doctors had fussed about the possibility of infection, hiding from him the fact that none of them knew what the microalgae throughout A7's skin would do when it underwent trauma.

A7 lay for a while in semi-consciousness, the sedative muddling his brain after so many days without sleep. Eventually he was so uncomfortable he rolled off his back and onto his injured side. The skin beneath the bandage was tingling.

If he were to get an infection anywhere, this was probably the best place to be so, with an effort, he sat up

and unravelled the bandage from his leg. In his sedated condition, it took determination to manage, and once it was off he removed the gauze pads pressed against the abrasion.

It looked as though someone had painted the side of his leg red with a coarse brush. But there was no pain, so he picked absently at the dry blood which, to his surprise, came off easily to reveal young skin, beautifully smooth and tinged a light green colour. His body had already healed in a fraction of the time it would for a normal person; fascinated, he continued to pick away at the scabs, revealing even more new skin, until for the first time in over a week, he fell asleep and dreamed of intense smells and wonderful sunshine.

* * *

Luke had seen the man from the Administration twice: a small unassuming executive with penetrating eyes and a boyish face. Introducing himself as McQuoid, Luke had struggled to find common ground with this representative of his employer. He thought McQuoid superior and calculating and unwilling to share information, which reinforced Luke's already well-formed opinion it had been a mistake to come here.

Approached while still at the university, after taking hold of Tom Ramsay's trial and building it into a full-blown project, Luke's first meeting with the Administration had excited him. They were extremely interested in his work and offered him a ridiculous salary and

operating budget together with laboratories—enough to make any academic's eyes water.

All available right now if he would come join their team.

An amount of five times his annual stipend was enough to get the money-hungry Luke in the door. It wasn't until he signed the contract that he read the appendix schedules and realised he'd need to move to a facility in the north-east of the United States that operated under top security and with limited privileges.

It wasn't the first time an academic had been tricked by someone they thought was stupider than them. Over the next two years, Luke was to lose that arrogance altogether.

* * *

Today there was an unannounced meeting with Director McQuoid. Medicine, Immunology, and Microbiology were called into the principal building's conference room where McQuoid sat beside a man with a holstered firearm. Luke knew the patients were criminals, so it made sense to have a heavy security arm at the complex.

The Administration's representative wanted an update. Starting with Microbiology, the senior researchers reported their progress since McQuoid's last visit. Biological slides with tissues in various stages of microalgal enhancement appeared on the overhead screen, their many colours and shapes described in detail. Biomedical Engineering and Medicine shared their update together, which confirmed Pearson's view that he was being kept

in the dark with some of the work that was being done at the centre.

Irritation got the better of Luke and he questioned a patient's development line on a graph that stopped on a date, while the others had continued.

'That's when C1 died,' said Biomedical Engineering.

Luke blanched. 'What do you mean, died?'

'I thought that was clear enough.'

'It's a statement, Don, not an explanation!'

The Head of Biomed cast a sideways look at McQuoid. 'He's not the first one. Jeez ... where's your head at Luke? This isn't chicken pox we're playing with here.'

Luke turned his open mouth towards Medicine.

'What the hell is going on? Did you know about this, Charles?'

Charles shrugged.

'Microcystosis. Happens sometimes—symptoms like a common cold, then ... wham, they're gone. The body was cremated last week after the autopsy. I'm surprised you didn't know about it.'

'No, I didn't know about it! I'm not told a lot about what's going on in other wings. In my opinion, we're getting too siloed and should be more collaborative in our work.'

'Let's take this offline,' interrupted McQuoid. 'That's enough for now; thank you, everyone.'

The senior men of the facility collected their folders and killed the power to the projector screen.

'Pearson ... a word before you go.'

* * *

It started in autumn, and it was forceful. But Rachel liked this strong, mysterious man. Rachel's relationship with A7 had developed over the weeks to where they now found opportunities to be together. It couldn't be in his room, because of surveillance, but they used what other spots they could find, like the observation medical rooms which offered the best chances to not get caught.

But Rachel figured there was a bloody good chance she'd be in a lot of trouble if they found out. The pair kept it secret and danced around everyone; however, it meant chances to make love were spur of the moment and that meant it was always unprotected. She'd been on the pill since her teens to help keep her periods light, and she wasn't overly concerned about the risk of pregnancy—it hadn't happened yet. So, when she fell pregnant, it came as a shock. Rachel's professional life plan didn't have a baby in the picture, and against her better judgment, she chose to not abort. 'Fall pregnant' sounds odd and almost biblical, like a fall from grace, however, *fall* describes what happened to the poor girl.

Rachel had a slight figure, so it wouldn't be long before she would show. What she didn't expect was a tummy bump before she even got the chance to realise she would miss her next cycle. Her loose theatre clothing helped hide it for a month, but after that she had to tell someone before they saw for themselves. She thought Luke would be the least likely of all the men to judge her and told him first.

'Good for you, Rachel. I had no idea you were considering having a family.'

The girl looked sheepish.

‘Do I know the father?’

Rachel had prepared for this. ‘Probably only by face, he’s a guard in E Block. We keep our relationship really quiet ... we’d like it to stay that way, too.’

‘Sure ... not a word from me. You’ll need to figure out your time off with the Administration, and all that ... just say if you think I can help.’

‘I’m good for now. Still getting used to the whole idea of being a mum!’

Luke continued his work without a skip and Rachel relaxed. It was comforting he didn’t seem too concerned. But then he asked whether Charles knew.

Charles didn’t take it at all well. The head of Medical Research was a misogynistic, self-centred bastard if ever there was one. A totally inappropriate character for a man whose life was built on human medicine, but that, in part, explained why he was working in a secret research facility.

He respected Rachel’s intelligence and dedication, but the pregnancy would eventually restrict what work she could do, and Charles wasn’t a tolerant man. For the time being, they expected Rachel to carry on as though nothing was different; he even gave her more work as a way of punishment for putting him out. She was simply happy they hadn’t sacked her. But things took a turn for the worse five weeks later.

Rachel knew something was wrong when her belly grew at an astounding rate and she became anaemic and gestational diabetes took hold. Her boss eventually showed compassion because a sick co-worker was a bigger

pain to his routine. He agreed to run another ultrasound and was shocked when the image showed a twenty-week old baby, at least three months more advanced than it should be.

Rachel was a mess when she saw the images and in her hysteria she let slip to Charles who the father was, a convicted criminal spared a death sentence, and who was now a genetically modified human. Charles immediately reported to McQuoid, and the Administration got involved.

At McQuoid's direction, a small area of the complex became a maternity ward and a new doctor joined the centre to monitor Rachel. It confused Charles when he learned the newcomer would report directly to McQuoid and have nothing to do with the rest of SERAPH. There would even be a different access pass to the new ward, and all contact with Rachel and the new doctor could only be via McQuoid. In twenty-four hours, all changes were made.

* * *

A7's bare muscled chest was virescent under the lights in the medical room.

'Where's the other doc?'

Pearson slid a needle into the vein in the crook of the man's arm. It was startling how the man's skin was becoming greener each time Luke saw him. The injection sites had all but disappeared replaced now by an even colour across the entire skin surface. The algae had spread fast through the epidermis.

'She's taken up another position somewhere else.'

Luke clicked a vacuum vial into the needle holder and saw the pale red flow. Both men watched the vial fill, then Luke swapped it for a second sample.

‘Bullshit she has.’

‘Why do you say that?’

‘Because I know she was pregnant.’

Luke put the glass tubes in a kidney dish, took up a clipboard, and wrote a few lines.

‘What’s your name?’

‘You know it’s A7.’

Luke kept his eyes on the clipboard.

‘I meant ... what was it before you came here?’

The man thought for a moment. ‘My name used to be Ryan.’

For the first time Pearson noticed the whites of the patient’s eyes were turning green.

‘I’ll make sure she knows.’

* * *

In a similarly isolated site, further east across the border in Maine, engineers were starting a new facility for the Administration. It was different to SERAPH: smaller and without the Perspex outdoor areas—less of a research complex and more like a hospital. They secured the construction designs at the Administration’s headquarters and contracting companies were only given the sub-plans for the sections they would build; the Administration made sure no-one saw the complete set.

McQuoid was at his desk, leaning over the second storey layout to the new facility, writing questions in a

neat hand on the margins of the A3 sheets and inserting changes where he thought necessary. The cover of the floor-plan folder was titled:

PHENEX

Photosynthetic Next Generation.

His superiors were fast-tracking its development, expecting McQuoid to have it operational within a year. It would be a stretch, but the Administration had full confidence in him to deliver. He'd succeeded so far, apart from the one glitch when a staff member had given birth to a fully-formed child after only a four-month pregnancy. It was a shame that the child was stillborn.

A challenge for McQuoid would be finding new patients. This time he needed females. Perhaps some hostelrys could help, or he could simply go to the prisons again. Prisons might be easiest; the formula had worked for SERAPH. He could offer women on death row a fresh start, a chance to begin again, to be better and stronger humans. McQuoid was a patient man: first the building and staff, then the subjects. Which meant, for the meantime, he poured his attention into finishing the floor-plan labelled *Birthing Suites*.

