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A green-tinted photograph of a cave interior. The image shows various rock formations, including stalactites hanging from the ceiling and stalagmites rising from the floor. The lighting is dramatic, with bright highlights on the rock surfaces and deep shadows in the recesses. The overall color palette is a range of greens, from dark forest green to bright lime green.

Green Comet

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Chapter One – Elgin Wakes Up

“Rannie?” His question disappeared in the gray light.

Elgin didn't want to wake up, but he knew he was going to. He recognized the signs. First came the gray light, when he came aware. It happened instantaneously, with no transition. Just this awareness where there was none before, at least none that he remembered.

“Rannie?” There was the question again. Who was he asking in this gray place?

He almost recalled why he didn't want to wake up, but it was shattered by a series of vignettes. A woman? Huge dark caverns. A glittering menace. Iceberries. The taste of iceberries. The woman.

Things began to happen. Flashes of light first, then colors, and the grayness was broken by transient hints of shape. “Rannie!” He blurted her name, then didn't recognize it. Shapes and shadows started to resolve into the contours of a room, and he began to remember. They were waking him up again. He didn't know why yet, but it made him feel sad.

Chapter Two - The Comets - Introduction

By the time they began visiting them, the comets had been in the sky for over a hundred thousand years. The people, according to the fossil record, probably weren't interested before about eighty thousand years ago. There were plenty of stone tools, but nothing like jewelry or art to indicate symbolic thinking. So, when they became curious enough to wonder what they were, the comets had been up there for at least twenty thousand years.

The time was an approximation, of course. With something like a shower of comets, which could last for millions of years in extreme cases, a few tens of thousands of years either way would easily fit inside the margin for error. So they set a parameter, that at least two comets would be visible at any given time, and approximated when that would have begun. The answer was close enough to round to a hundred thousand years, so as long as people had been aware enough to be interested, there were at least two comets visible in their sky.

Eventually, after eighty thousand years or so, they were able to do the math and they realized that comets were not only features of the sky. Probability dictated that some of them would come inside the moons, and a few even strike the planet. Geology showed that some already had, leaving behind many craters large and small.

Evidence indicated that the planet had suffered repeated comet strikes, some with devastating effects on the biosphere. That provoked a range of responses, from angst and worry through stoicism and fatalism. There was even a faction of the population that said they deserved to be hit because they were bad, and they welcomed the impending retribution.

They were rewarded. As the science slowly improved, astronomers were able to identify several comets that had the potential to strike the planet. It was a cluster of returning comets whose orbits were observed several centuries earlier by amateurs. The observations were good, and if they were accurate then there were three comets that were destined to come close. Within the next century there was a high probability that at least one of them could collide with the planet.

The response was good, on the whole. Preparations were made. Buildings and infrastructure were built with some margins for safety and durability. Social structures evolved to be resilient in disasters. While they were thinking of the comets, it also served them well in normal planetary disasters. Every hurricane and earthquake helped them test and improve their plans. But it wasn't as good as it should have been. There were naysayers and heel draggers, and there was a sense that the problem was only theoretical and the preparations just cautious formalities. When the time came and all three comets missed the planet, though not by much, the people relaxed and went back to more immediate concerns.

When astronomers announced another possibly dangerous comet in the following decade, the reaction was naturally sceptical. Their estimates were initially imprecise and every subsequently improved one only served to highlight the lack of certainty. The naysayers had a wonderful time and the air was full of cruel jokes at the astronomers' expense. The more they tried to emphasize the danger the more they were mocked. Even people with the inclination to believe them were unsure of what to think. Only a very few took steps to prepare, and they were very discrete about it. Fear of ridicule is a powerful emotion.

By the time they were finally sure to a sufficiently high probability, the astronomers had only a couple of months left to convince people. The problem was exacerbated by the ingrained disbelief and they couldn't get people moving until they could all see it with their own eyes. Then it was too late to mount a proper response and they were left with a disorganized collection of inadequate plans fueled

mainly by panic and desperation.

During the final month the people of the world lived under the uncaring gaze of a comet growing ever larger in their sky. Every day they looked up, hoping to see that it was drifting away from its course, but its aim was unwavering. The astronomers, who were now being blamed by some for not doing more, for not warning them sooner, were now able to predict when and where it would strike.

Frantic efforts were made to move people out of the area, and they were remarkably successful considering the size of the problem and the lack of time. Still, millions would be stranded.

When the day finally came and the great horror was so adamantly real, everyone was left to ultimately decide how they would deal with it. Some threw themselves into their work, maintaining a normal existence by sheer willpower. Some parted themselves into oblivion. Others prayed or preached, laughed or wept, even killed themselves and others in answer to this declaration of the insignificance of their actions. Thankfully most people were with their families, ready to face it together in spite of the cold indifference of reality.

The comet was clearly visible. It shone even in the daylight sky as brightly as one of their moons. It was over eighty kilometers in diameter and its spherical shape was plain to see. They were already within its coma, which gleamed in the night sky and twinkled like diamond dust in sunlight. Those unfortunate millions left within the impact zone would see it rise over their eastern horizon just before it obliterated them.

It was debated for years afterward whether or not there was an impact. The most compelling evidence was in the seismic records. While there was plenty of sign of a tremendous shock at the passing of the comet, it didn't have the sharpness of direct contact. The jolt was most likely attributable to the airburst explosion of searing steam that devastated that side of the globe. The consensus verdict was that it had been a near miss, so near that the comet had dipped well into the atmosphere on its way by.

It was still catastrophic. Many people died in the airburst, save an unlucky few who lingered in its aftermath. There were continent wide fires, filling the air with smoke and blocking out the sun for two years. There were tsunamis around the world caused both by the slug of ocean that rose to meet the comet and by the shockwave from the airburst. There were earthquakes in every fault zone, while old and new volcanoes came to life. Even the weather was roiled up as the atmosphere dealt with being ripped up and sown with vortices. The steam condensed out in the Great Comet Rain.

It was a catastrophe but it wasn't the end of the world. Not quite. Their halfhearted preparations were what made the difference in the end. Even then it was too close for comfort. Agriculture failed. Transportation and communication were severely limited. The normal things that keep the world civilized, such as supply lines for essential goods and open contact among people, were almost lost. Only the presence of the durable parts of the infrastructure, and especially the social networks people had built, kept them from collapsing into chaos.

It was still grim. There might have been mass starvation had they not worked together to prevent it. There could have been hoarding, rioting and war. Instead, inspired by the millions who were already dead, people pulled together.

There was adequate food, though severely rationed, to get everyone through the next few months while they labored to grow more. With no sunlight they had to use artificial lights on a grand scale in greenhouses and hydroponic farms. Even with their best efforts, once the supplies were gone everyone ate nothing but algae cakes for almost six months.

In the three years it took to struggle back to where success looked plausible, only twenty percent of the remaining population died. There was enough food to survive, even to fuel normal

activity, but they were so close to the line that it was inevitable to lose some. Things as simple as injury or illness can be too much to overcome when the resources to deal with them are spread so thinly.

When they finally were able to anticipate better times, to lift their heads from endless urgent tasks and look ahead, it was with sober resolve. They had won this confrontation with fate, but only at a terrible cost, and only with the enduring shame of their inadequate, almost flippant preparations for it. They pledged both privately and publicly that it would never happen again.

Much good came of it in the long run. They now had a global perspective of things. They had survived a global catastrophe together and now they would live together in a global community. What it had cost them ensured that they never took that for granted.

As they rebuilt their civilization they built in toughness and durability. Structures were designed to protect lives and to remain useful during and after emergencies. Well stocked relief centers were established at strategic locations. The most essential means of transportation would remain viable. Communication and vital social interaction would be preserved. Supplies of food and other necessities were stored to sustain them for at least six years in the total absence of any other source. They didn't forget the algae cakes, either. They just wanted to be sure that they weren't going to have nothing but algae cakes ever again.

In an unexpected quirk, astronomers suddenly became sexy. Since the incident, people tended to pay them more respect. As a result, astronomy became a desirable field of study. Not only did students fill astronomy classrooms and trigger a boom in the construction of observatories, but sales of telescopes soared as amateur astronomy swept the world. Everyone wanted to discover a new comet, and many dreamt of being the first to see "the next one." With that many eyes on the sky it was very unlikely that they would ever be surprised again. After eighty thousand years of living with them, the people were finally doing something about the comets.

Chapter Three – Elgin's First Day

The first day of his waking was confusing, but by the end of it Elgin was beginning to put it together. The morning was the worst. It was completely disorienting. Although his senses were functioning and transmitting information to his brain, it was indistinguishable when it got there. He didn't know if he was hearing the light or smelling the sound. His senses weren't filtering the stimuli, just dumping everything on the brain, and the brain didn't know what to do with it all.

Mixed in with that, part of that for all Elgin knew, random images from his memory flashed briefly, giving him tantalizing hints of coherent reality. They were so clear compared to the rest of it that he couldn't be blamed for thinking that they would be what he would see when all this confusion settled down.

He didn't know it but someone was talking to him during all this. As far as he was concerned it was just another smell, or maybe a taste. Then some time in the afternoon things began to make a little more sense. The senses themselves started to segregate, sight becoming sight and sound becoming sound. Colors became less random and shapes began to get edges. Then he could sense that there was someone with him, and they were talking.

“Frances is all right, Elgin,” they were saying. “She's still at the Center.” He couldn't understand the words, didn't even realize that he might, but he could understand the tone. It was soothing and reassuring, so he relaxed as he drifted off to sleep.

Chapter Four – They Go To The Comets

After their close call, when their civilization was nearly lost, the people spent a lot more time concentrating on comets. Soon it became obvious that watching them wouldn't be enough. No matter how good their preparations were, there would eventually be a disaster so great that it would destroy them. That's when they began to wonder if it would be possible to destroy a comet before it struck their planet.

Calculations showed that destroying the comet would make things worse. Unless they could vaporize it, or at least break it down into small pieces that would burn up in the atmosphere, they would end up with many devastating comet strikes instead of only one. The smaller comets were possible candidates for attempted destruction, but it was beyond reason to think they could deliver enough explosive power to the larger ones that way.

They turned their minds to the possibility of diverting a comet away from their planet. If they could change its course so it didn't hit them then that's all they needed. Of course they would want to ensure that it wouldn't strike them on any of its future orbits either, but averting disaster now was the main thing.

Comets had been part of their sky since before they were inclined to notice them. They featured in their myths, in their ancient folk tales, even in prehistoric petroglyphs. They were familiar with them. They thought they knew plenty about them, and they did. They could tell whether they were returning or new visitors. They could tell their size to a close approximation. They knew what kind of orbit a comet had almost before calculating it. But for all their intimate familiarity, when they began to think about how they might divert one, they realized they had no idea of their composition.

Of course they knew they were mostly water. Spectrographic analysis told them that. And they knew space was cold, so it would be ice. But was it a solid chunk of ice? Was it densely packed snow? Was it a loose aggregate of crystalline rubble? They didn't know, and if they were going to be pushing on comets in some way, as they had to if they wanted to alter their orbits, then they needed to know what they would be pushing on. If you thought you were pushing on something solid and it was really crumbly, then you would be wasting your time and endangering everybody's lives. To find out for sure they were going to have to go out there and see.

They had plenty of targets to choose from, since there were always at least two comets in their sky at any time. When they began, their technology was improving at such a rate that by the time some of their early missions were completing, some of their later ones had already done so. They learned what they needed to know. Although every comet had its individual peculiarities, they were all quite similar, confirming their theories about where and how they formed. As expected, the larger the comet, the more densely packed it was. While the smaller ones, up to a few kilometers, didn't really have a surface in the sense of something you could stand on, the larger ones did. When they got up to a hundred kilometers or more they were getting quite effectively compacted by gravity.

As it turned out, the comets more or less sorted themselves out. The smaller ones could be herded by spacecraft that would fly alongside them, while the larger ones were better suited for landing on. The machines would then do their work right on the comet itself. From there the next step was obvious. After not too many decades, people were going.

At first it was small crews on short missions. They would pick a comet that was going to pass fairly close – fortunately there were none on a collision course during those early days – and they would rendezvous with it. They would fly alongside it, making observations and trying out the techniques they hoped would change the comet's orbit.

They learned a lot from those missions, about comets, about spaceflight and about how it affects people. As soon as they could, they increased the size of the crews. They also began to send two or more vessels on each mission. The redundancy not only increased the safety and effectiveness of their efforts, it also had the effect of ameliorating their sense of being alone out there. Two little spacecraft might still be impossibly insignificant in the cold abyss, but it felt infinitely better than being one little spacecraft.

Soon they graduated to landing on larger comets to try out some hands-on techniques. Over time they extended those missions, first to months then years. Eventually they were meeting the comets in the outer system and riding them in.

Those voyages took decades and they had to change the way they thought about them. No longer were they simply missions, where you went out, did your job and came back. Now they were spending a significant portion of their lives out there. They weren't just visiting comets anymore, they were living on them.

The composition of the crews changed. They became more like a community than a team. Their operations were more like a village than a base. Long term relationships developed. Marriages were formed and some were broken. People learned how to deal with it and get on with their lives and their jobs. The communities had to develop their own laws and manage their own problems. They couldn't wait until they got back to deal with it and they found that trying to handle it by long distance, with communication delays rising into hours, was impracticable.

They got very good at it over the decades and centuries. Going out and spending a large part of one's life herding comets became a reasonable career choice, especially when hibernation techniques got to the point where a fifty year mission took only ten subjective years. The transition from looking at it as a mission to making it an adventurous working vacation was invisible.

Eventually, the procedure became so well established that private groups began going to comets purely for the adventure. Comets were chosen for reasons other than their threat, reasons like their size or where their orbits might take them. Comet people made the transition from public service to private enterprise.

Chapter Five – The Second Day

Elgin's second day started better than the first, except for the vertigo. He woke up dizzy and knew from experience that he didn't want to move his head any more than absolutely necessary. It wasn't as bad as it was in his early wakings, especially his first where Stanton was his minder. Repeated practice seemed to be inuring him somewhat to the effects of hibernation. More immediately important though, was the improvement in the coherence of his perceptions.

He knew who he was, where he was and how he got there. He knew that the person in the room with him was his minder, someone assigned to take care of him for a few days while he recovered from the effects of hibernation. He remembered who Rannie was, and why she was so important to him. She was the one he loved, the best woman in the universe, but she was lost to him. Unless . . .

He tried to speak, to ask his minder about her, but it came out as a croak and a gargle. That frustrated him, but the minder seemed to understand. He said, "Frances is okay, Elgin. She's still in the Hibernarium. She's safe."

That was both a relief and cause for anger. Fran was safe, but she wasn't here. Again they'd awakened him to her absence, in spite of his express desire to sleep until she could be brought up too. He croaked angrily at the minder, scowling.

"I know," the minder said. "You didn't want them to wake you up until they could bring Frances up at the same time." He shrugged and looked innocent. "They didn't let me in on their decision," he said. "I just entered the competition to be your minder."

Elgin's attention wandered before he was finished talking. As soon as he mentioned Fran's name he lost Elgin to memories and fleeting, teasing glimpses of his time with her. Just watching her move massaged his spine.

Elgin endured the rest of the day. Experience told him that was the best way to get through the confusion and discomfort of waking from hibernation. One thing happened that intrigued him though, and engaged his puzzle-solving engineer's mind. He hadn't yet seen the minder's legs. It could have been a simple coincidence, but some subtle, unconscious clues told him it wasn't. He suspected the minder was deliberately keeping him from seeing his legs, and his curiosity was aroused.

That night he awoke from an intense, confusing dream. Fran was in it but he couldn't get close to her, and when he talked her attention was always somewhere else. He realized he couldn't see her legs, and he became obsessed with it. There was a bewildering series of images ending with one that showed the full length of her body, legs and all. He couldn't make out what he was seeing but it startled him awake, his heart pounding.

Chapter Six – The Rise Of The Synesthetes

By the time they were into their fifth century of space faring, they reached such a level that nearly every comet that came into the inner system had people on it. It wasn't even necessary that it pose a threat to their planet, as long as it was close enough to get to and big enough to support occupation. Some comets were so popular that they had permanent resorts built on them. They became common destinations, often chosen by students for a break between their childhoods and their higher academic careers. The recreational comets were occupied only during the part of their orbit that was close to home, though. People might ride a comet as far as the gas giants, but no further.

There was a feeling that, while comet engineers might venture into the outer system if there was a comet that needed it, the distances and times involved were beyond what anyone would do for entertainment or adventure. That was before the synesthetes came along, though. They took comet travel to the next level. They weren't interested in just visiting a short period comet for a few months. Even meeting one out by the gas giants was too tame for them. Their aim was to ride one all the way out, staying with it for a full orbit.

It took a lot of preparation. The planning alone took over a decade. They had to decide what would make a suitable comet. How big would it have to be to support people long enough? What about the composition? The comets explored so far were known to have some useful materials in them. Could they count on finding resources on theirs, or would they have to plan to bring everything with them? How difficult would it be to transport a thousand people halfway across the system? They were going to need at least that many because eighty percent of them would be in hibernation at any time, and two hundred made for quite a small village. They were going to need all essential skill sets represented by whoever was awake at the time. This wasn't a trip to a vacation resort.

Raising the money wasn't difficult. There were many synesthetes in the world, seemingly more all the time. Although they existed in a fragmented distribution, separated by distance and political boundaries, they were virtually a single community. They had become aware of their difference. It was rare for a synesthete to grow up not realizing that the people around them couldn't sense things the way they did. Only under the most repressive regimes were they prevented from supporting each other.

Even in these enlightened times, though, synesthetes still felt like outsiders. It wasn't as bad as earlier times when their difference frightened people. Back then they were rare enough to really stand out. When at most only one family in a whole village was so afflicted, it was easier to ostracize them. In those dark times it was easier to single them out and use them as scapegoats. Easier to impute to them evil characteristics. In the worst times, in the worst places, they were abused, tortured and killed, for the good of everyone.

These times were on the whole better. The prejudices were generally more subtle and less lethal. Most parts of the world didn't practice institutionalized discrimination against synesthesia any more. Most synesthetes enjoyed much the same freedoms as their fellow citizens, and the minority who didn't often had others to stand up for them. As a rule, it was impossible to victimize synesthetes merely because of their difference.

It wasn't perfect, though. It could be very difficult for children alone among non-synesthetic children, for example. And at any stage of life there was the risk of offending someone just by having something they did not. The synesthetes had something other people didn't understand, and they dimly feared it. It was something they envied without knowing why, and so it was something they had to despise. In the end they blamed their discomfort on the synesthetes, accusing them of thinking they were better than everyone else.

So, a combination of worldwide community and a general sense of exclusion from the greater community contributed to the willingness of a small percentage of synesthetes to go on this extreme quest. And those who wanted to go had the support of the rest who would stay home. Even though it was an enormous project it never suffered from lack of funds.

It did have one, perhaps surprising, consequence. It put synesthetes in the spotlight again, for better and worse. They became targets for those who wanted to find fault, and every bad thing ever done by a synesthete became proof of their imperfect nature. Their defenders came forward with examples of good done by synesthetes, and of the exceptional qualities of a few. Those exceptions became further proof of their difference. So their defenders showed that synesthetes were, on average, just as ordinary as everybody else. In other words it was the same old thing all over again and, other than a spike in assaults and vandalism, had minimal effect on the real world.

There was one difference this time. There was a widespread feeling that this was a recent development, a feeling that became embedded in the culture. Anything more than a cursory observation would show otherwise of course. There were obvious examples of synesthesia throughout history. Later ones were positively identified by the careful recording of symptoms, but it was easy to infer many earlier cases, even from their less objective accounts. Those early ones were often found wrapped in superstition, either as signs of divinity or of demonic possession. Going even further back, some researchers claimed to see synesthetic effects in cave art, but their findings were disputed.

Despite the evidence to the contrary, the feeling was that the synesthesia phenomenon was a recent one. Even those who knew better rationalized the feeling by saying that it might have always been around, but that there had been a sharp increase lately. Suggestions that it was a mere artifact of more knowledge and better reporting fell on deaf ears. Feelings trump dry logic all the time. Now they needed an explanation for the increase and they didn't have to look far. It was the Great Comet Rain of course. It fit so well and felt so good that it quickly assumed the role of common knowledge.

That it should lead back to a comet was not surprising. People had been doing that throughout history and presumably long before. They had always attached significance and meaning to the appearance of comets. Yes, most people now knew that comets were lumps of mostly water, but they also knew with comfortable certainty that it all meant something, that it was significant to their lives. Not surprisingly they were able to confirm their beliefs with all the obvious effects in the world. Their history was full of events that correlated with the motions of the comets, and this case was no different.

The fact that the prevalence of synesthesia was increasing gradually anyway did nothing to dissuade the Great Comet Rain theorists. People don't tend to see gradual change, so it became a sudden jump in the public consciousness. Of course the proximity of an important event like the global disaster and the ensuing deluge couldn't be a coincidence. Their ultimate argument, the one that they held up as final proof that they were right, was that their opponents couldn't prove that it wasn't so.

However it happened though, synesthetes had become a sizable portion of the population. There were estimated to be between two and three people out of ten who had some degree of some form of synesthesia. For most of them it was a mild form, like sensing shapes or textures in association with words or ideas. For some though, maybe for as many as ten percent of the total world population, it was strong synesthesia, defined by the presence of at least two forms of it, well integrated with the rest of their perceptions and reliably heritable.

The effect it had on their lives was no longer incidental. Interacting with normal people was becoming noticeably unsatisfying. It was almost like talking with someone who had an adequate grasp of the language, but no idea at all about idioms.

As a result it wasn't hard to find a thousand strong synesthetes who were ready to take this grand adventure. Still, just as much as the selection of the comet would take time, so would all the other preparations. The logistics of getting people off the planet and out to the comets was well

understood, but never had this many been moved all at once. There were too many for one or two spacecraft. Even with most of the people hibernating, they would have to use a minimum of ten ships. Then they would want to move as a fleet, not individually, so they would have to gather somewhere before heading for the rendezvous.

They decided to split the mission into two parts, a method that worked so well that it was used for all subsequent synesthete comets. Two ships with two hundred crew flew out to meet the comet. Their job was to land on it and prepare it for occupation. Years later the rest of the people went. First they assembled at a Lagrangian point, where most of them entered hibernation. Then, tended by a small crew, ten ships swung around the Sun for a gravitational boost and headed out toward deep space. The comet came around the Sun after them and caught up with them out by the gas giants. That was Red comet, the first of the full orbit class.

Chapter Seven – Elgin Meets Minder

When Elgin woke up on the third day he found his senses nearly integrated, except the common sense of synesthesia. He knew where he was, if not why they had woken him. After a few minutes of concentration he was able to recall that his minder had told him his name, even though he found it confusing that he would be called Minder.

He lifted his head and it wasn't too bad, but when he tried to bend at the waist the movement sent the whole room tumbling end over end. He closed his eyes and tried to force his body back flat on the bed. He only knew he'd done it when he felt himself come in contact with the bedding, felt its gentle grip holding him firmly in place. Lying still, eyes closed, breathing calmly and steadily, Elgin waited while the dizziness slowly subsided.

While he was waiting he thought about his situation. Once again he was awake, and alone. No Frances. She was still too ill and it wasn't safe to bring her up from the Center. So here he was again, in spite of his wish to remain at the Center with her, awake in a world that was just a hollow ache because she wasn't in it. And – he could never resist doing the calculation – getting older while she didn't age. In the many centuries this had been happening, he had continued to age and was now eighty, while she was still only fifty-seven. If she ever was able to come back to life, would she want an old man like him?

He heard the door open, felt the change in air pressure more than heard it, and cautiously opened his eyes. There was Minder at the foot of the bed, looking flustered or hurried somehow. He must have come at high speed because his nictitating membranes were just retracting. Elgin risked the dizziness and lifted his head to see the rest of him, but he was hidden from the waist down by the footboard. He sighed and put his head back down. "How long has it been this time?" he asked.

"How long? I only took a few minutes," Minder protested. "I was asleep. It's not morning yet."

Elgin looked at him sharply. He was sure he'd seen colored light reflecting off Minder's face. He looked up at the medical displays behind him. There were lights up there. They didn't look bright enough, but he decided that must be it. He was still a little disoriented, so it shouldn't be surprising if funny things happened. "No," he said peevishly, "how long was I asleep this time?"

Minder glanced at the display. "It looks like you only got about four hours," he said his voice full of concern. He was surprised to find Elgin frowning at him.

"How long," Elgin said slowly, "was I at the Center?"

"Oh!" Minder looked sheepish. "Of course. You were down for fifteen hundred years this time." Elgin looked but couldn't make out which lights were reflecting off his face.

"Fifteen hundred years," Elgin mused. "I understood some of what you told me yesterday." He took a quick glance, but Minder always seemed to find a way to keep his lower body concealed. "Your name is Minder, right?" Minder nodded. "Is that your birth name or your comet name?"

"It's my comet name."

"Did you always want to be a minder? Is that why you chose the name?"

"Not really. I took it when I found out I was going to be your minder."

"My minder? Why?"

"Well, it just seemed natural. I was going to be Elgin's minder, so what could possibly be a better name?"

Elgin peered at him closely. "Is there something I need to know?"

Minder glanced away, colored lights playing across his face. "What do you mean?"

"What's so special about being my minder?"

Minder's mouth fell open. "But, you're Elgin. One of the Five." Elgin made a face at him.

"Really! One Hand Against Annihilation. The Five. You're a hero. Everybody knows about you."

"Fine." Elgin had heard enough. "You also told me that Frances is still at the Center. Still no change?"

"That's right." Minder cast his eyes down.

"And you woke me up this time to decide on crossing to the next star?"

"Yes."

"And last time you woke me it was to welcome the comet catchers home."

"Not me," protested Minder. "I wasn't even born then."

"Well, if not you then someone just like you." Elgin turned his face away. "Fifteen hundred years ago. The time before that. And the time before that." He looked back. "It's always for some good reason," he said quietly, "and she's never here. You're always telling me she's not here."

Minder was crushed. "I'm, sorry Elgin, I . . ."

"Just get out of here. I want to sleep now."

"Of course. Are you sure there's . . ."

"Go on. Leave me alone." Elgin didn't sound angry, just sad.

Minder nodded, took a last look at the displays over the bed, picked up a few things and left. Elgin tried to sneak a peek, but the sheets Minder was carrying covered his legs as he backed out the door.

In some ways the third day was the worst. Coming out of hibernation could be a storm of sensations, a confused jumble of impressions, but by the third day they usually settled down. Then, for some people more than others, it was the turn of their thoughts to take over. Most found it confusing and a few found it unbearable. What they needed was to be up, to be active, to be restarting their lives. If it wasn't for the persistence of the vertigo they could be. Instead they had to lie still, waiting and thinking.

Elgin got a few more hours of sleep before waking up again. This time it was really morning, comet time. The door opened and there was Minder, looking as if he had just awoken too. Elgin's brief hope was immediately dashed by the sight of a sleeping bag Minder had clutched at chest height.

The morning passed that way, with Elgin slipping in and out of sleep. At midday he didn't want to eat, didn't want to talk, didn't want anything. Minder suggested a light dose of a mild sedative, just enough to help him sleep a little more and wake up less often. "You can't do anything anyway. It will let you rest up for a big day tomorrow."

"We have a big day tomorrow?" asked Elgin.

"Tentative plans," said Minder. "If you feel up to it."

Elgin nodded. "That sedative sounds good. In fact, I don't mind if I sleep straight through."

"Right," said Minder. "Pleasant dreams, Elgin."

"Thank you, son," Elgin said as his eyes got heavy. "See you in the morning."

"See you in the morning."

Chapter Eight - The Square

Elgin was awake when Minder arrived. He was determined to find out why the young man was so careful to conceal his lower half. He'd been trying since he noticed, with peeking and surprise looks. He'd even tried feigning sleep to catch him off guard. Now he was planning on being by the door when Minder came in. He figured he wouldn't expect that, but if this didn't work he didn't know what he'd do. He damned well wasn't going to ask.

Fifteen minutes went by. Elgin could hear Minder moving around in the anteroom. Why wasn't he coming in? What could he be doing out there all this time? Elgin frowned just a little bit and waited another ten minutes. Finally he got fed up and went out.

"Minder! What are you doing hanging around out here?"

"Ah, Elgin," said Minder, "awake at last."

"I've been awake for an hour," snapped Elgin.

"An hour?" Minder smiled at him and smoothed his apron. It was a big apron. It covered a lot. "What have you been doing in there for an hour?"

"I was waiting for you." Elgin couldn't take his eyes off the apron. "Why didn't you come in?" He casually sidled over, hoping to see around it.

Minder turned to follow him. "I was preparing breakfast." He gestured at the table. "I thought you'd be feeling like getting up today, so I wanted to have something nice ready for you." The table was covered with tasty looking food.

Once Elgin noticed it, he realized he'd been smelling its delectable aroma all along. His stomach growled, distracting him from Minder's apron. He enjoyed the pleasant sensation of hunger for the first time since waking up. He drifted over and picked up a piece of toast, inhaled its redolent aura of iceberry jam and took a big bite.

Minder joined him at the table and they shared breakfast, chatting between bites. They talked about little things. How was Elgin feeling? How did this compare with his previous wakings? Minder, being young, only had one waking to compare, so he appeared fascinated by Elgin's rich experience. They got to know each other a little better in that half hour.

When they were done Minder turned more serious. "Elgin, there's something I have to tell you."

Elgin looked at him, and the expression on Minder's face set his skin pricking. His synesthesia was re-integrating his senses, but the rush of smells and colors and other sensations was still a little uncoordinated. "What is it?" His worst fear flared. "Frances? Has something happened to her?"

"No, no!" Minder was quick to reassure him. "There's been no change in her condition. If there ever is, you'll know first thing. No one would ever keep that from you."

Elgin relaxed. "Alright then. What is it?"

Minder moved away from the table and began to untie his apron. "I know you've been curious about this and now it's time to show you."

Elgin waved his hands. "You don't have to. It's your prerogative. It's none of my business if you've got . . . if there's something . . ." Elgin sputtered to a stop. He was embarrassed. Felt caught out.

Minder smiled at him, making it worse. "You know you're dying to find out. You've been trying for the last two days."

"I have not!" Elgin lied. Now he felt foolish.

"It's all right. We knew you'd be curious, but we wanted to wait until you were mostly

recovered from hibernation disorientation first.” He pulled the apron aside.

Elgin stared, blinking. At first he couldn't make out what he was looking at. He knew there was something wrong with Minder's legs. He could see that they were deformed somehow. They were too short and the knees didn't bend the right way. And the feet were all wrong. He gasped when he saw one of them flexing like a hand. A couple of seconds of disbelief, then the shock of realization. It was a hand! And the leg it was attached to wasn't a leg at all. It was an arm. The other one was a perfectly symmetrical replica. Minder had four arms and four hands.

He looked up, full of concern and pity. “What happened?” And, thought Elgin, why hadn't it been corrected?

“It's okay. You don't have to feel sorry for me.” Minder spread his four arms. “This isn't a birth defect or a mutation.”

Elgin was speechless. He was a bit ashamed now of his presumptuous pity, but still at a complete loss.

“Then,” Elgin began, and stopped. “I mean, if it's,” he tried, and, “that is, if it's not.” He stared at Minder's lower arms. They were slightly larger than his regular arms, and more robust. The hands were larger, too. Not so much longer in the fingers as thicker and heavier looking. They didn't look as if they would have the dexterity of the upper hands, but they certainly looked stronger. They were oriented the same way as the original ones. With his arms at rest, all four thumbs were on top, so using the new hands would be similar to what he was used to.

Elgin soon realized that having arms in place of legs must be something that Minder chose. It would be something like the thick coat of fur that everyone wore for their necessarily cold environment. Or the enhancements to their eyes. Or cryptic genitalia. Once he saw that, he really started to stare. Now, instead of a slightly uncomfortable social problem, it became an interesting technical problem, and that was right up Elgin's alley.

Minder finally began to feel awkward under the intense scrutiny. Elgin noticed a slight withdrawal, with the arms folding in a little. He also thought he saw a play of light on Minder's cheeks. That seemed odd, since out here there were none of the colored lights that were on the medical instruments in the bedroom. Just normal yellow daytime lighting. He chalked it up to a lingering aftereffect of hibernation and got back to Minder's arms. Seeing Minder's discomfort, Elgin said, “Sorry, I don't mean to stare.”

“Not at all,” said Minder. “It's perfectly natural for you to be curious.” He smiled, while faint hints of light glowed in his cheeks. “I'll let you examine them to your heart's content, any time you want.”

“If it doesn't bother you too much, I wouldn't mind having a closer look.” Elgin floated over and took hold of the lower hand Minder offered to him. He closely examined the palm and felt its texture. He felt the leg, or arm, jerk and saw Minder squirm. “Sorry, still ticklish, eh?” He chuckled, then continued the inspection. “It has the same setae?” Minder nodded and Elgin worked his way up the arm, feeling the bones. They didn't feel exactly like arm bones, but just like modified leg bones should feel. They had more mobility than leg bones, but they were still sturdier than arm bones. The elbow retained characteristics of a knee, but with more rotational freedom and without all the mass and ligaments of a joint built for support under gravity. The shoulder felt peculiar. “This is still a hip joint, isn't it?”

“Yes,” said Minder, feeling decidedly odd. “We don't really need the same range of motion there, so we've opted to keep it simple.”

Elgin nodded. “The original shoulder is a bit of a kludge,” he said. He felt Minder beginning to tense up and let him go. “So, I can see the benefit of an extra pair of hands.” He smiled. “As an engineer, they would have been useful.”

"Oh, they are. You'd be surprised."

"I bet. And they probably get in the way less, too."

"Yup. Getting around is a lot easier."

"Anything else?"

"Yes. It sidesteps the whole issue of legs pushing blood into the upper body in microgravity. And it feels better balanced too, although that's quite subjective."

"Well, I admit it took me by surprise, but I can see why you would do it," said Elgin.

"More and more people are having it done, usually during their first sleep. And a few people are starting to make it a heritable trait. Do you think you might do it?"

Elgin thought for awhile, looking at Minder's unfamiliar proportions. It was a bit much to contemplate at his age. He said, "Probably not." Then, "Hibernation disorientation? Couldn't you find a longer way to say that? What happened to 'sleep lag'?"

"Sorry, my fault. I should have done more research. I wasn't sure if we were using 'sleep lag' when you were last awake." Minder took a deep breath, then said, "Elgin, I can see that something else has caught your attention, too."

"What?"

"I'm sure you've noticed lights in my face from time to time. I've seen you looking."

"They're real?"

"Yes."

"That's a relief." Elgin peered and was rewarded with a little reddish glow. "First I thought it was the medical lights reflecting off your face. Then I thought it was, what did you say, hibernation disorientation." He saw the glow deepen slightly. "My sensual integration has been slow this time."

"No, your senses are fine. Well, your vision in this case."

"Good," Elgin said. "So all that remains is the obvious question. Why do you have lights in your face?"

"Let's see if you can guess."

"Okay, sure." Elgin thought for a moment. "Alright, first, is it biological or technological?"

"Biological."

"So it's something you had done during hibernation, or did you inherit it from your parents?"

"It's heritable."

"Is it just you or do other people have it?"

"Virtually everyone has had it for the past two centuries."

"Ah, so it's not a fad then."

"No, it's on a par with fur or vision."

Elgin pondered, frowning. "That means it's considered a necessity. It's something that everyone agrees is important to life on this comet."

"Yes," said Minder.

"Is it some form of communication?" That made sense. In the dim lighting and with their good vision, such lights could be used to communicate. Could there be a whole language of the lights? That alarmed him. "Am I going to have to learn another language?"

"No," said Minder, "you already know this language."

Then Elgin had a clear flash of the right answer. "It's the blush reflex, isn't it." Minder nodded. "And you've modified it, replaced, or maybe enhanced the vasodilation with bioluminescence."

"That's right."

Elgin moved in closer, peering at Minder's cheek. He reached out and parted the fur, trying to see the skin at the base of the dense growth. Minder obliged him with a little blush and he could see both a reddening in the skin and a glow as well. "Kept the blush itself I see."

"Yes. It's felt that the warm sensation is an important part of the reflex."

"So you know when you're blushing."

"Yes. It's a social display and it's most effective when everyone's involved."

"I see what you meant about already knowing the language. Now that I know what it is, it all makes sense." He looked Minder in the eyes. "You sure blush a lot," he said with a smile.

Minder glowed brightly. "I know. I always have. Kids used to tease me to make me blush." He shrugged his shoulders. "Sometimes I wish I didn't have the bioglow."

"Yeah, that's what I was wondering. It might be nice to hide your blushing. Save some embarrassment."

"I know!" Minder compressed his lips and shook his head. "But everyone agrees that the social communication is more important. The way we live, we need to know how each other is feeling."

"Even you? Do you think it's worth it?"

"Absolutely. A little discomfort is a small price to pay for the good of the comet."

Elgin nodded. Minder's willingness to sacrifice for the comet was practically a universal trait among its inhabitants. "Good attitude. And don't worry, people tend to like you better if you blush once in a while."

"Sure, thanks," Minder said with a flat smile. "So, do you think you'll . . ."

"Probably not." Elgin couldn't imagine doing it without Frances. Especially the legs.

As soon as he thought of her he saw her in his mind's eye. She was beautiful, with her golden fur and eyes, and her long, straight legs. Now he realized that her legs were part of what he found especially attractive about her. At the time he didn't particularly single them out, but now he could see that they were part of her overall gracefulness. When he thought about it, he wasn't sure if he would want to go for the leg modification even if she were here. He'd wait and see what she said. She'd know.

"Do you have more questions?" asked Minder, while clearing the table.

"No," said Elgin, bemused to see the young man absently holding a plate in one of his lower hands. "It's just quite a lot to take in all at once."

"I know," said Minder, looking despondent. He picked up another plate. "Sorry."

"Don't be sorry," said Elgin. "I'm glad you showed me." He watched as Minder picked up another plate and added it to the others. "I was going to find out eventually and you've saved me from what could have been quite a shock."

"That was the idea," said Minder. "We thought you should be prepared."

"I agree. That was a good decision."

"Thank you, but . . ."

"But what?" He could see that the youngster was having a difficult time. He looked as if he was disappointed about something.

Minder looked ready to speak, but he closed up. "No, it's nothing to bother you with. It's my problem."

"Okay," said Elgin, "I understand." He wouldn't pry if the boy didn't want to talk about it. But still, "I'm happy to listen if you do want, though."

Minder's expression relaxed. He said, "Okay. I guess I could tell you." He organized his thoughts. "I failed. I had a few simple things to accomplish as I assisted your waking, and I didn't do it. I needed to show you my second arms and the bioglow, and with three days to do it I ended up dropping them on you all at once."

"I see," said Elgin.

"Now I really feel stupid."

"For the way you handled it? Don't feel stupid. You did alright. That was a good way to do it."

"No. I mean here I am making a big deal out of it. You've got more important things to think about than this."

"Not right now." Elgin made sure he had Minder's attention. "Listen, Minder, I've worked with a lot of people, a lot of good engineers. The ones who became great engineers are the ones who did just what you're doing now."

"Really?"

"Really. The great ones are never completely happy with their work. They're always looking for what they can do better."

"They are?" Minder started to smile.

"They are. I think you have what it takes to be a great minder."

"A great minder." He blushed self-consciously, embarrassed to be compared to Elgin's associates. "Not really in the same league though, am I?"

Elgin frowned at him. "Don't sell yourself short. This job is just as important as theirs."

"Really?"

"Really."

Minder didn't believe it. Elgin could see it in his face and in his body language. It was obvious he couldn't equate his work to the great engineering accomplishments that had made Green Comet into a comfortable and beautiful place to live. He said, "I've known a lot of great engineers, Minder, and every one of them needs a minder when they come out of hibernation."

Minder looked up, surprise and dawning awareness in his face. "Like you," he said. "Even the greatest of men like you need a minder when they wake up." He was brightening right up. "This job really is important, isn't it? Being a minder for someone like you . . ." He stopped abruptly when he finally saw the glower growing on Elgin's brow.

Elgin spoke quietly, but there was no mistaking the power there. "Every job is important. Every waking sleeper is important."

"Of course, of course," Minder said hastily, remembering what he'd learned about Elgin's violent rejection of any attempt to elevate him above others. He tried hard to see the truth of the lesson he was getting from Elgin. "I think what you're telling me is that, well, all jobs are important. All work is valuable."

"That's right," Elgin said gruffly.

"And," Minder quickly added, "that we should honor our work by giving it . . . by doing it with the dedication it deserves. Oh, I know what I want to say but I just can't get it right."

"You're doing fine," said Elgin, his aura softening a little. "I can tell you understand it." With one last riveting glance he said, "All that's left is to see if you can live it."

"Right." Minder looked abashed. He wasn't entirely sure he'd be able to live up to Elgin's expectations.

"So," said Elgin, "what else is on the agenda? Whatever it is, it'll have to be pretty good to stand up to what's happened so far."

"Oh, right," said Minder. "I completely forgot, what with, you know, everything." He got a look on his face that Elgin would come to recognize as an attempt to quell a blush. It didn't work. "So, anyway, yes, there is something else on the agenda for today. That is, if you're up to it."

"Let's hear it and we'll see."

"Right, of course. We thought, if you were doing well and the vertigo was under control, you might like to go out for a little excursion."

"What? Leave these rooms?" Elgin said, feigning horror. "What were you thinking?"

"So it's okay then? You'd like to go out?"

"Yes, of course. I'm tired of lying around here."

"Good. I'll just finish cleaning up and we can go."

Elgin had a thought. "Hold on a minute. This is just you and me going out for a little exercise, right? You're not planning any surprises are you?"

"No," said Minder. "I just thought we'd go to the Square. It's only a couple of kilometers and we can come back the minute you're tired."

"The Square? You mean the same Square?"

"Yes, the same."

"The Square," mused Elgin, a rapid series of memories riffing by. The construction of it. The social outings, presentations, art installations and public announcements that just naturally took place there. Its destruction and rebuilding. "That brings back memories," he said. "And now I know where I am, too." People tended to give directions or describe events relative to the Square. "If we're that close to the Square, then I know just where we must be." He saw Minder's face get worried again and quickly figured out what it must be. "No, Minder, you haven't failed. There was no reason for you to think of telling me our exact location before now."

Minder blushed yet again, then made a good recovery. "I'll take your word for that," he said.

"Good. So, if you're done there, let's go!"

Minder led the way out into the corridor and Elgin slowly followed him, glancing left and right. The passage tapered toward the vanishing point in both directions, with a gentle curve cutting off the view after many hundreds of meters. Elgin had to stop and collect himself as he experienced a slight residual effect of waking vertigo. He focused on a point on the wall directly opposite their doorway and held utterly still. With the comet's microgravity being far less than one percent of that of their planet of origin, there was no way to plant one's feet firmly on the ground to steady oneself. Comet people learned that the best way to settle things down was to concentrate on a fixed point in the middle distance. Normally it was never a problem for Elgin, but no one was immune to post hibernation vertigo. So he stared at the opposite wall, about thirty meters away, and waited for it to pass. It was a mild event and it didn't last long.

Minder waited patiently, as one did on these occasions. No need for concern and no need for comment. When Elgin was ready, in less than a minute, they set out again without a word.

They went to the right, pushing off from the doorstep launching block. With some minor adjustments to attitude and trajectory, they were soon coasting at two meters per second, about five meters out from the wall. It was a leisurely pace, but it wasn't very far. They could easily cover the two kilometers in less than twenty minutes. The microgravity caused a slow sinking toward the floor and the drag of the air gradually decreased their speed, but neither was going to tire Elgin unduly.

They continued to fly in silence. Elgin's eyes were traveling over the corridor, taking in the lines and angles. His engineering instincts asserted themselves, causing him to pick out more details in the construction. This corridor was new to him, built while he was asleep, no doubt. He looked at it even harder now, as one engineer assessing the work of another. He followed the near wall down to the floor and up again, over twenty meters to the ceiling. He looked over at the other wall and followed its tapering perspective forward. He saw the ceiling stretch ahead, approaching and disappearing behind the floor as it curved down out of sight.

It looked good to Elgin, and that expressed itself in his body as it always did. Whether abstract specifications, scale drawings or the finished product, Elgin could feel when it was right. This corridor felt smooth. The comfort he felt in his body, as if everything was where it should be, all his bones perfectly aligned and in their proper places, told him it was good workmanship. He felt glad to see that the engineers, with whom he still felt an allegiance, were as good as ever. The comet was okay.

"You've got a nice look on your face," Minder said. "What are you thinking about?"

"Oh, I was just looking at the engineering work here." He took another look at it and gave a satisfied nod. "They did good work. It made me feel good to know the comet's still in good hands." He smiled happily at Minder. "Just as I'm in good hands."

Minder made a face. "I know my work is important and all that, but I just can't see how you can compare it to this." He gestured at the grand dimensions of their route.

"I can only hope," sighed Elgin, "that your vision improves."

Minder grimaced, but it was as much smile as anything else. "So, how do you feel?" he asked in a conciliatory tone. "Are you getting tired or anything?"

"No, I'm fine. It feels good to get out and stretch my legs, so to speak." They were stretched out behind him as he glided along, but they weren't getting much exercise.

"Very funny."

"What? Oh, right. Sorry."

"Never mind. I'm very happy with four arms."

Elgin looked at Minder's peculiar outline again. It actually did look more efficient. It was more compact, more practical looking. He had no trouble forming an intellectual understanding of the advantages of the modification, but he couldn't make the emotional leap to imagining having it done to himself. "I can see that. You look very comfortable. Obviously it's going to take a while before it's old hat to me, though."

"Well, I hope you're a little bit used to it anyway, because there will be people in the Square and probably most of them will look like me."

Elgin nodded, then looked ahead with anticipation. He could sense that they were nearing the Square. He could feel the space opening up just beyond their sight. There were subtle, nearly subliminal cues in the air pressure gradients and in audible sounds as well. They created the impression of relative looseness in the air ahead compared to behind.

Soon they could see the opening where their corridor let out into the Square. They began to be able to resolve the sounds into distant voices and to see details in the buildings on the far side. When they broke out into the open space they came to a stop a few meters in so Elgin could have a look. The Square was indeed square. The opposite wall was two hundred meters away, its facade of windows and terraces stretching up another hundred twenty-five to the ceiling. Elgin instinctively approved of that golden ratio. There were entrances to other corridors like theirs spaced all around, with theirs being in the middle of their wall. The corridors fed into the Square at floor level, although in a space this size one could as easily call it the ground. The walls had ornamental columns reaching up the first ten meters with friezes at their tops which continued around the walls.

There were a few dozen people in the Square, some traveling through while others seemed to be here for its own sake. Directly across the Square they could see a group of children in the company of an adult, apparently on a school field trip. The children, about twenty of them, were in a constantly circulating swarm that moved this way and that in a random walk, while the adult calmly pointed out the Square's important features. They seemed to be making their way, in spite of everything, in the general direction of the middle of the Square.

Elgin could see there was something there, some kind of installation or display. He glanced at Minder, who nodded, and they began to move slowly in that direction. As they got closer, he saw that there were several statues, and he tried to think who they might be of.

The squirming cluster of children got there before they did and immediately surrounded the statues, blocking their view of them. They had to get almost right up to them and then make their way around to the front before he could identify them.

Elgin gasped when he recognized Frances, looking almost as she had when they were young.

She was standing in her familiar speaking pose, a subtle look of motherly love and concern on her face. Elgin looked at Minder, who was observing him closely.

Standing at Frances' shoulder was another statue. It was of a man with a warning scowl on his face and one wing cupped protectively around her back. He looked at Minder again, the beginnings of a scowl on his own face. "Is that supposed to be me?"

"Yes, Elgin."

Elgin looked at the statues again, back and forth between them for a while, then a long, penetrating stare at the face of Frances. "She never looked like that."

"But it looks just like her. It was done from real images."

"It might look like her," Elgin said, getting lost for another long moment, "but she never looked like that."

Minder couldn't see what he meant. Couldn't figure out what he was saying. "Elgin?"

"Well, that look on her face. It's too . . . soft. She never looked like that when she was speaking. Especially during the debates over the separation." Elgin fell back into his reverie, speaking quietly, as if to himself. "Her face had steel in it, and her eyes had fire." He smiled at the pain of memory.

Minder was surprised. His picture of Frances was based largely on this statue. He'd just assumed it was right. "Well," he said weakly, "artistic licence?"

"Artistic licence? Who gave them licence to lie?" Elgin was getting agitated. It looked as if he was about to say more when he was surrounded by a fluttering swarm of children. He spun around, surprise approaching alarm in his face.

"Children!" It was the adult who was tending them. "Where are your manners?" They listened to her and dropped back, giving him some space. They still surrounded him and they were staring at him, most of them agape with wonder and curiosity. "I'm sorry," she said. "They always love to come here and look at the statues, and seeing you . . ."

Elgin glanced at Minder, who looked half worried and half relieved. He looked at the children, whose expressions varied from eager to frightened. That shocked Elgin badly, to see fear in the faces of children, especially if the fear was because of him. Frances would be horrified. Elgin looked at her likeness again, and was ashamed at his earlier reaction. She would have looked like this if she was talking to children. She loved them, a feeling intensified by her decision to not have any herself. Elgin turned to the guardian and said, "It's alright. They just startled me." He smiled at the children, who surged forward, fear forgotten.

The children were in a constant swirl of motion. They all wanted to be close to him, preferably in front where they could look into his face. As with any system of energetic particles confined to a small space, this resulted in collisions and much jostling. Their little wings were flapping constantly, raising a small wind and occasionally slapping Elgin around the head and shoulders. He was ducking and grinning.

"Children!" cried their guardian, almost laughing, trying not to.

"It's okay," said Elgin, laughing out loud, making it okay. The children shrieked, giddy with the joy of the moment. Elgin reached out and patted a few heads and they began to calm down. When things were more or less normal, he asked them, "You come here a lot, do you?" Twenty little voices combined to convey their answer.

One boy said excitedly, "We like Frances!"

"Of course you do," said Elgin. "Everybody does."

Another one blurted, "Are you really Elgin?"

And another, "You were with Frances, weren't you?"

"Of course he was," declared another.

"Where is she? If he's here, where is she?"

And one small voice said, "Is Frances dead? Is she?" All their faces asked him, "Is she?"

The smile froze on Elgin's face. It was only by force of will that it didn't disappear altogether. He would not show his hurt or anger to these children. Not here, so close to Frances. But it didn't do any good. They knew anyway. They were pulling away from him, their faces full of apprehension. Some of them turned on the one who had said it, punishing him with words and blows. The guardian was trying to usher them away, her arms spread like a shepherd.

"Wait." Elgin found his voice. "Wait."

They stopped moving away and turned to face him solemnly. All but the little boy, apart from the crowd, curled in on himself. He looked so miserable that Elgin felt the pain in his own stomach. He held out his arms. "Come here," he said. The boy looked at him but didn't move. "Come on. I'm not mad at you." The boy looked at the other children, who were glaring at him. He looked at the guardian, who nodded. He looked at Elgin, searching for any sign of anger. When he saw none he slowly, cautiously moved closer. When he was within reach, Elgin gently took his hand. "You didn't ask a bad question," he told the child. "It just caught me by surprise, that's all." He gestured at the statue of his beloved. "I just miss her so much," he said, his voice suddenly shaky.

Alarm filled their expressions. The boy grabbed Elgin's hand, shaking his head. This Elgin wasn't like the statue, strong and unfeeling. This real Elgin could feel sad, just like him. He came close and said, "Me, too." The other children crowded back in, murmuring their support. They had never known Frances, not really, but they knew a lot about her. They heard the stories, grown to legends, about Elgin's powerful love, so seeing him now, seeing how much he missed her, they could understand.

And it helped. The strong flood of simple childish sympathy bolstered Elgin's spirit. It also magnified the presence of her spirit and helped him to respond to their curiosity. He told them a story of a time when he and Frances were young. A time before the awful circumstances that made them famous. Frances took a group of kids, a lot like this group here, on an outing. There weren't any statues then, so they didn't come to the Square. Instead, they went swimming.

Elgin painted a good picture for them. They could see her golden fur glistening with water droplets. They knew just what she looked like as she watched them swim. They laughed at the other kids' antics. In a few minutes the sadness was forgotten and Elgin had another twenty people who would love him forever.

Their escort gave Elgin a look that conveyed an apology for the intrusion, sympathy for his loss, gratitude for his actions and an enigmatic combination that he saw a lot but could never really interpret. Minder noticed it and saw admiration, respect, even love. But there was also a strong shade of awe with something else strongly associated that he reluctantly realized was fear. That was something he'd have to think about.

The children were finally shepherded away, waving and calling his name as they went. Their commotion and the excited chirping of their voices turned heads all over the Square, until they disappeared into the mouth of a corridor. A small group of adults had to move aside to let them by, and they stared in Elgin's direction afterward.

"Well," Minder said, raising his eyebrows at Elgin, "how about that?"

Elgin was smiling. It still showed the joy the children had given him, but it was filling up with melancholy. He glanced at Minder, then turned to gaze at the statues. "Children, eh?" he said. "They get right to the point, don't they?"

Minder didn't speak. He just stood shoulder to shoulder with him, looking at the statues, trying to assimilate all the new revelations. He thought he knew about Elgin and Frances, even more than everyone else. Maybe it was time to examine that assumption.

"I noticed," said Elgin, "that all of the children had legs. Is that a pretty good indicator of how rarely people make it a heritable trait?"

"Yes," Minder confirmed. "So far it's less than five percent, so zero out of twenty is a reasonable sample."

"You said it was increasing, though?"

"Yes. Most of us have it done during our first sleep, so it's only a matter of time. And there doesn't seem to be any advantage to having legs for the first twenty years, either. I think we've reached a kind of phase transition on that one."

"But they all had the bioluminescence. Which makes sense, since you said it's heritable now." His voice trailed away as he drifted in for a close look at the statues. They were life-sized. At least they weren't monumental, Elgin thought. He couldn't imagine what it would be like if the statues towered over everything. It was embarrassing enough having them here at all. "What are they made out of?" He thought a metal of some kind, since any ice, even water ice, wouldn't hold up here where the temperature was almost at the melting point of water.

"Bronze," said Minder. "Very traditional."

"Did they find copper and tin here?"

"No. The materials came with the migration."

"But those are limited resources! They're only supposed to be used when absolutely necessary."

"People decided it was necessary. The vote was nearly unanimous."

"But still. For statues?"

"Sometimes symbolism is a necessity. The people wanted to honor their heroes and they wanted to use up valuable resources to do so." Minder went up and put his hand on the chest of the bronze Elgin. It was obvious that he wasn't the first. Both statues had a polished, nearly worn look to them. "People need to be able to come here and touch you, Elgin."

"Humph!" Elgin tried to stay stern, but he couldn't hide a little glimmer of pleasure. All the years of scrimping and fiercely guarding their resources ingrained in him a certain abhorrence of waste. Maybe he'd have to learn to define waste differently now. "I don't know about being a statue. That will take some getting used to. But if the people think it's worthwhile, then I'll learn to live with it."

"I'm sure the people will be relieved to hear that," Minder said, with a little smirk.

"Alright, enough of that," Elgin laughed. Then he remembered the third statue, and got a shock when he looked at it. "What's he doing here?"

The third statue was standing off a few meters, oriented to be looking at the first two. Elgin was sure it was looking at Frances, but it had its head slightly bowed and there was a look of acceptance about it. It was Nigel, Fran's greatest adversary. "What's he doing here?"

"Well," said Minder, "he's a hero, too."

"A hero? He fought against her every step of the way. He was opposed to her plan. How can they both be heroes?"

"Well . . ." Minder was extremely uncomfortable. He really didn't want to be the one to explain this to Elgin, so he was glad of an interruption.

"Elgin?" came a voice from behind them. "Sir? Are you Elgin?"

They turned and saw a group of half a dozen people clustered deferentially some distance from the grouping of statues. They were obviously at pains to not be intruding.

Minder moved forward, unconsciously protective. "Can we help you?"

There were four men and two women. One of the men spoke for the group. "We're talking to Elgin, not you, armful."

Minder was shocked speechless. Elgin had never heard the term 'armful' before, but he could

tell it wasn't meant to be friendly. "Hey, now," he said, coming to Minder's defence.

Minder turned and held up his hand. "It's all right. I'll take care of it." He had seen the symbol of two comets they all wore on their chests and now he knew who they were. Elgin saw his firm resolve and decided to let him take charge. He thought it might be interesting.

Minder turned back to the Francesians. The icon they wore was a representation of two separated comets. It was symbolic of the great sacrifice that must be made for the greater good. They wore it to show their devotion to Frances, the focus of their theology. Minder adopted a placating tone. "Elgin is still recovering from hibernation," he said. "This is the first time he's been out since waking up. Maybe this isn't the best time."

"Do you speak for Elgin?" asked the man, taking offence on Elgin's behalf. "Why don't you just move aside?" They began to shove past him.

Minder tried to throw himself in front of all of them at once, but they manhandled him out of the way. Seeing his helpless desperation, Elgin barked, "Hold on, now!" The scuffling stopped.

"Let him go! Back off!" Elgin pulled Minder out of the crowd while the Francesians backed away, their faces a confusion of emotions. He saw a strange mixture of reverence and fear, rapture and loathing. He held them back with a flick of his eyes while he pulled Minder away.

He put the statues between them before he spoke to Minder. "What's going on? Who are these people?"

Minder was blushing. He found it hard to meet Elgin's eyes. "I'm sorry. I had no idea this was going to happen."

"But what is it? What's happening?"

Minder looked at the small mob, shaking his head. "This was something else I had to tell you. I was waiting for the right time, but I guess that's now."

Elgin glanced suspiciously around the wing of his own statue. "Are you saying this is about me somehow?"

"Yes," said Minder, his head drooping. "Although, more accurately, it's about Frances." Elgin tensed up and Minder hurried on. "It's nothing bad, really," he said hastily. "They actually like Frances." As Elgin relaxed he added, "They like her a lot. They worship her, really."

Elgin smiled. "Lots of people worship her," he said.

"Well, these ones literally worship her. They call themselves Francesians. She's their saint."

Elgin didn't register it right away. He heard the words. He knew what they meant. But the concept was so far out of context for him that he didn't understand what he was hearing. He just looked at Minder blankly.

"It's a new theology, Elgin, and Frances is the basis of it."

"Saint?" whispered Elgin.

"Yes," admitted Minder.

"There's a church founded on Frances?"

"Yes. Actually, it's not just her." Minder's blush flared and he added warily, "You're a saint, too."

Elgin's mouth opened but nothing came out. He noticed and clapped it shut again. He looked at Minder's face and found no humor there. He looked at the people on the other side of the statues and, now that he knew, thought he could see signs of religious zeal there. Looking back at Minder he finally saw how miserable he looked. "So, you knew about this?"

"Yes. Everyone knows about the Francesians."

"Francesians." Elgin frowned. He hated to think of what this would do to Frances if she knew. His protective instinct flared at the thought. "You were going to tell me but, what with everything else, you put it off, right?"

"That's right," murmured Minder. "I never thought we'd run into any. I thought nothing much could happen if we went to the Square for an hour." Minder mercifully stopped before he could start to babble. And he was puzzled to see Elgin grinning.

"What could possibly go wrong, eh?" He patted Minder's arm. "Never mind, I'm not laughing at you. That's just an old engineer's joke."

Minder laughed weakly. "I'm really sorry, Elgin. I just seem to be screwing up one thing after another."

"Don't worry about it, son. Once again, I don't think you handled it wrong. This is just one of those things." He looked at the group of people. Francesians? They obviously didn't know Frances. Saint Elgin? He barked a laugh. They obviously didn't know him, either. "I'm going to talk to them."

"No, wait!"

"It's all right. I think I can handle it."

"But that's my job. My responsibility. I'm your minder."

"I know that, and I don't want to step on your toes or take anything away from you. But I'm a grown man. I think I've recovered enough from hibernation disorientation by now. And there are some things a man has to take care of for himself."

Minder agreed reluctantly. He knew Elgin was right about that. It might be his job as minder, but it was Elgin's right as a citizen of Green Comet to deal with his own problems. They nodded and moved out from behind the statues. Elgin glided up to the huddle while Minder hung back a couple of body lengths.

Elgin addressed the group. "Hello, I'm Elgin. I believe you wanted to talk to me?"

The same man moved forward, obviously assuming the role of representative, and one of the women fell in just behind one of his shoulders. They all clasped their hands in front of their breasts. "Oh, Elgin," said the man, "protector and champion of Frances, take pity on your humble servants and grant us your blessing." They stared at him, expressions of awe and servitude, some real and some practiced, filling their faces.

Elgin got hold of himself before he could snort, but he couldn't be sure that nothing showed in his face. He replied quietly, "And lover."

They were brought up short, the spell they were under wavering slightly. "Pardon?" said the man.

"You forgot lover. I was Frances' protector and champion and lover. That's important."

The man was struck speechless. The woman looked disgusted and furious. The rest of them looked at each other and there was a buzz of voices. The man recovered first. "Will you grant us your blessing?" he asked.

"That depends," said Elgin, feeling the beginnings of a rebellious uprising inside him. He looked them over, slowly and thoroughly, not bothered at all by their growing discomfort. "I notice that you all have legs," he said. He was thinking of what they called Minder.

"Why, of course," said the man, supported by an upwelling of affirmation behind him. They were surprised that he would bring it up. "We keep our bodies in the form God made them. In the form of the Saints!"

"Is that why you insulted my friend?" Elgin indicated Minder, floating behind him in his obvious armfulness.

"What?" They were incredulous. How can you insult anyone who's destroyed the handiwork of God?

"You called Minder a name and you didn't allow him to do his job." He enjoyed their confusion. Their mission was so important and he, one of their saints, was talking trivia. They didn't realize they were being tested. "He's my minder and I'd appreciate it if you would show him more

respect.”

The woman looked as if she wanted to spit out some foul tasting thing. The others produced a hubbub of anticipation. But the man was made of sterner stuff. This was why they let him be their leader. He adopted a tolerant posture, waved the others to silence and said, “Of course. The Saints instruct us that all people are due our love, no matter what.” He turned to Minder, getting the rest of them to follow suit, even the very plainly reluctant woman. “Sir,” he said, “we are truly sorry for the way we behaved and we beg for your forgiveness.” The others, including the woman after a stare down, also begged his forgiveness. The man smiled at Minder, looking proud of himself.

Minder decided to back Elgin's play, whatever it was. “Your gesture is accepted in the spirit it is given. Thank you.”

The man's smile cracked a little, but he had to overlook the scepticism in the reply or admit the insincerity of the gesture. He looked back at Elgin expectantly.

“Well, that's more respect and that's what I asked for.” Elgin's face was serene, his smile gentle and his temper mild. He looked just like a kindly old man. The Francesians relaxed, but Minder perked up. He didn't know why, but he could sense something below Elgin's placid exterior. “I notice also,” Elgin continued, “that none of you has bioluminescence, either. Minder tells me it's heritable, so you must be getting it reversed deliberately. Why?”

“Primitive animals have bioluminescence. The Saints did not and neither do we.”

“The saints do not, you mean.”

“What?” They looked at him suspiciously.

“As one of your saints I resist the notion of being in the past tense.”

If the man had bioglow it would be showing. “Of course,” he said. “I didn't mean . . .” The woman couldn't stand it any more. She pushed forward and said, “Quit dithering.” Then to Elgin, with a nasty glance at Minder, “The point is we refuse to perform these blasphemies on our bodies. There's no place at the side of the Saints for anyone who does.” She glared triumphantly.

Elgin, still smiling, said. “I understand.” He nodded at them and they relaxed a little. The woman even looked slightly abashed. “You want your bodies to be as your god made them.”

“Yes,” said the man. “In the image of the Saints.”

Still nodding, Elgin said, “And because your saints have fur and wings, it's okay for you.”

“Yes,” ventured the man, a little less enthusiastically.

“I think I understand,” said Elgin. “Let's see if I'm right.” He was still the kindly smiling old man, speaking softly. “You keep the necessity of warmth and the convenience of flight because your saints do.” They nodded dutifully. “But you reject extra arms and blushing.”

It sounded funny when he said it like that, and the man hastened to be sure that Elgin didn't misunderstand. “No, no. It's not like that.” He struggled to find the words. “God has shown us how we are meant to be. God has given us the Saints as a guide.”

Elgin nodded, looking thoughtful. “Your god is using us as examples.”

“Yes. But not just our God. Your God, too. And the God of Frances.”

There was a very slight change in Elgin's appearance. Nothing about him was especially different from before, as far as Minder could see, but he definitely looked different. He was still smiling, but now it wasn't likely to make anyone relax, as it had before. When he spoke, his voice was still gentle, though. He said, “I wasn't aware Frances had any gods.”

“But she did. I mean she does.” He looked desperate to make Elgin understand. “It's everyone's God, the Creator of the Universe.”

“Well, I hope your god has a sense of humor, because Frances didn't believe that the universe was created by it.” In a photograph, Elgin's expression would have conveyed the fact that he was sincerely hoping to help these people to better understand his Frances. In the room, the temperature

dropped five degrees. Behind him, Minder began to move in, sensing trouble.

"But of course it was!" The man was re-animated. The woman looked furious. Even the others spoke up, adding their chorus to their leader's words.

Elgin, still earnest, said, "But Frances didn't think so, and neither do I." It wouldn't do any good, though. He could see them change. Gone was any openness they might have enjoyed, replaced by a familiar argumentative posture.

"How do you know there's not a Creator behind everything?" The man smiled smugly. The woman sneered. This was the question that had no answer, especially from the relativists.

"I don't," said Elgin. Then, into their gloating faces, "Any more than you do."

The smirks fell away. Even in the heat of battle they could see that arguing over who knew better would not make them look good. Especially with one of their Saints. The man decided to assume victory instead. "So," he said, "you admit it."

"Yes I do," said Elgin, "if you will."

"We're not admitting anything! We know there's a God and our God created the universe."

"I have no problem with that. I believe people have the right to turn their religion instinct into whatever kind of theology they want." Elgin was trying to be placating. He didn't want to upset these people. He really believed what he said about their religious beliefs. But he had rights too and, not least because she couldn't be here to stand up for them, so did Frances. "It's just that I can't allow you to speak for me, and you're certainly not going to speak for Frances, either."

"But we do speak for her. We are the Church of Frances." The man suddenly seemed to realize where he was, and with whom. He tried to become gracious, but it came out as wheedling. "Come to our Church, Elgin. See for yourself. See how we have honored Frances." When Elgin didn't reply right away, he took it as a good sign. Maybe Elgin had seen the light. Maybe he was winning him over. "Come on, Elgin. Maybe you'll learn something. Maybe you'll see that you don't know our Frances as well as you think you do."

Elgin's pause had nothing to do with the Church of Frances, though. Rather it was his synesthesia. Something, possibly stress but more likely the affront to Frances, had triggered his senses to complete their re-integration with a firm, somatic click. He thought he was fully conscious and aware before, but now he could see what had been missing. "Oh, yes," he thought, "this is what it's like."

It was as if everything was two dimensional before, then flatness gave way to rich textures. Or as if monochrome were replaced by full color. Everything was still the same, but it was now laced with extra meaning, layered with added complexity. He became aware of the light and how it felt on his skin. The sounds of the people in the Square combined into an ephemeral music that spoke to him of their feelings. Closer, he could feel the anger of the Francesians. It beat on his face like the wings of insects. It tasted like acid in his mouth.

The man was still talking and, now that he could hear properly, Elgin knew why he found it so offensive. It was wrong. The quirky talent that came from his synesthetic common sense could detect the simple wrongness of what they were saying. There was no music in it. Now he knew it was time to end this.

His gaze came back from his inner world and fixed on the man, who stopped talking as if he'd been slapped. Elgin said, "You're not doing Frances any honor. You know nothing about her, or about me for that matter." He looked at their pendants. "Do you really think she would have wanted this? No. Go away and find something useful to do." He turned away. It was over.

The man was stunned into muteness and the hangers-on were already making to leave, but the woman had other ideas. "You can't tell us what to do!" she shouted. Faces turned their way all over the Square. "We bring the message of Frances to the people. We speak for Frances, not you!" Her

words seemed to echo endlessly in the shocked silence. It was as if the comet itself was holding its breath.

As Elgin slowly rotated to face her, Minder saw something that he thought was only a legend. Elgin's face had changed again. No longer was it that of a kindly old man smiling, even superficially, in response to the tiresome demands of strangers. Now it was the expressionless, chiseled mask of Frances' champion. This was the face that had sent grown men into early hibernation during the Great Debates. It wasn't angry. There was no malice in it. Minder couldn't say exactly how it had changed. Maybe there was something in the jaw below the ears. Maybe the brow was a little heavier, he didn't know. He did know he was glad Elgin wasn't looking at him like that. The Francesians gasped and shrank in on themselves. Even the woman looked less sure of herself.

Elgin spoke quietly, without heat. "As long as I'm alive," he said, "I will speak for Frances." The comet seemed to release its breath. "As for you, you can say what you want, but here's a little advice." Elgin looked each of them in the eye, ending with the woman. "Maybe you should wait until your saints are dead, so they can't contradict you." Elgin turned his back on them again, drifting in Minder's direction.

Minder kept his eye on the Francesians, especially the woman. She had such an expression of anger and loathing that he wanted to be ready in case she came after Elgin. The man finally had to physically pull her away from there, and they straggled disconsolately back the way they came.

They left the Square under the gaze of the people who had seen them harassing Elgin. Some of the eyes were hostile. Everyone knew Elgin's story. They understood his loss and his pain. They all knew that Elgin would rather be hibernating than living without his beloved Frances. And when he had to be up, always to perform some duty for the good of the comet, he preferred to be left alone. So their sympathy crossed the Square to him, but they did not.

Minder didn't say anything. He just let Elgin sort through his thoughts and feelings, while staying close for whatever support or comfort he might give. The last vestiges of the legendary face were already fading away, with a sadness deeper than anything Minder had ever seen settling in its place. It hurt him to see that. He felt helpless and angry. Why did those people have to do that?

Elgin roused himself and looked at Minder. He was glad to see the young man looking back at him, strong and level, his eyes not flinching at all. In there he also saw anger and sadness, a charming protectiveness and no pity whatsoever. Elgin liked this boy more all the time. "Well," he said, "that's that, then, eh?"

That caught Minder by surprise. "That's that?"

"Yes. They're gone now, and that's the important thing."

"But what they did. What they said to you. I thought that one woman was going to attack you."

"But she didn't. And if she had, you would have stopped her." Elgin winked. "I noticed you back there. I knew you had my back." He got more serious again. "They went away, that's what matters."

"Just making them go away."

"Yes. You can't do anything about what they think or believe, so the best you can do is make them go away."

Minder was still young enough that the confrontation itself seemed more important. The merits of the arguments. The rightness of the actions. But he was smart enough to know that Elgin was probably right. Especially since it was Elgin's ordeal and not his. "You knew you couldn't change their minds," he ventured, "and listening to them wasn't going to, uh, make things any better." Elgin nodded. "So the only reasonable option is to make them go away?"

"That's right. As soon as possible. Before it starts would be best." Elgin shook his head. "If it hadn't been about Fran, this wouldn't have happened."

“What made you so negative about religion in the first place?”

“I’m not. I’m in favor of religion. I think the way we look at things through our religious filter helps us to understand better, just like our science filter.”

“Then this was all about Frances?” It hadn’t seemed that way to Minder.

“Not entirely,” said Elgin. “I’m suspicious of theology. I think theology can sometimes pervert religion just as technology can sometimes misuse science.”

“Do you think the Church of Frances is misusing religion?”

“Not really. Oh, they’re certainly misguided. And they don’t know the first thing about their saints. But they haven’t descended to the level of manipulating people for evil purposes.” Elgin heaved a sigh. “You should read up on Yellow Comet. That will give you an idea of what I worry about.”

“Yellow Comet. We learn about them in school. They were all killed, right?”

“Yes. The killers are usually referred to as ‘religious fanatics.’ I don’t think they were very religious, but they were surely fanatical.” Elgin made a bitter mouth. “The thought of such a thing being done in the name of my Frances . . .” He shook himself vigorously. “Well,” he said, rubbing his hands, “what else is on for today?”

Minder told him that the Square and the statues were all he’d planned, and apologized again that there’d been more than he planned for. Elgin laughed and suggested that they take a tour around the Square. He wanted to check out the engineering up close, particularly now that his senses were whole again. Then they could head back home.

He took one last, long look at the statues. He stared into Frances’ eyes, and admitted once again that her expression was okay, even if it wasn’t what he remembered. He looked at his own statue and snorted. Finally he looked at the third one, set a ways off from the other two, and frowned. He wasn’t quite sure what to think of that one.

Chapter Nine - Yellow Comet

Minder was planning to look up Yellow Comet in the Commons, but first he wanted to check out the relationship between awe and fear. And also between adoration and fear. He wasn't concerned with the children's fear. That was a natural reaction to such an event in their young lives. They were experiencing something new and uncertain, but all they needed was a little reassurance. What did concern him was their guardian's reaction, and that of the Francesians.

A little research gave him a working hypothesis: the fear was probably due to the realization of their vulnerability. Whether they were conscious of it or not, they instinctively knew that the power of their adoration or awe could overwhelm them. They could lose themselves to the object of their feeling.

Minder stopped and thought about it. In a few minutes he conceded the logic, and that made him wonder about his own relationship with Elgin. He knew he was in awe of him, and he certainly adored him, but was he afraid of him? He thoroughly explored his feelings and decided not. He was afraid of disappointing him. He was afraid of failing in his responsibility to him. But that was all. He wasn't afraid of Elgin himself, and he wasn't afraid of his feelings toward him.

Minder relaxed. A contemplative smile spread over his face. Elgin might be gruff sometimes, even cranky, but Minder knew that was nothing to be afraid of. That was just Elgin dealing with his life. He was a special man who had responded admirably when circumstances required it. He acted heroically and had to endure heroic pain and loss. He deserved his elevated reputation in Green Comet and he lived up to it as well as any man could. But Minder knew the real Elgin, or at least he was trying to. You could love him and stand in awe of him, but that was because he did those things in spite of being only a man, not because he was unlike everyone else. Minder knew why people put Elgin on a pedestal, but he knew they didn't have to.

The Commons had a great deal of material about Yellow Comet. In addition to the straight encyclopedic entries, full of dates and facts and numbers, there were in-depth analyses, a great many theories, plenty of rants and screeds and just as many emotional homages. Minder realized that he had seen most of it already, or at least something like it. It was just the sort of thing one picked up in the normal course of living. The fact that it was common knowledge was why he was surprised when Elgin made such a point of it. But he had, therefore Minder would study the material in the Commons until he understood why.

He settled on the factual accounts, thinking that it would be best to just get the data and allow his mind to come to its own conclusions. It might be drier than the more colorful and tempting opinion pieces, but it would be worth it in the long run.

Yellow Comet was the third in a series of comets that were selected to be inhabited for one or more orbits. The idea of catching and colonizing comets suddenly struck Minder as a brazen one, and he had a renewed admiration for his ancestors. Looked at in the long view though, it was a natural step for his species, which had such a long and intimate relationship with comets. Especially after their planet was nearly destroyed by one, it was inevitable that the relationship would develop as it had.

In preparation for their migration to the comet, ten thousand people marshaled at the launch site. There they would register and prepare for departure, checking through their one hundred kilograms each of luggage. Of all the planning they did for the journey, most of them agreed that choosing what would make up that hundred kilos was one of the most difficult parts. What do you take

when you might be gone for centuries?

All of the passengers were synesthetes, most with strong expressions of the complex. It was the first time that most of them found themselves surrounded by their peers. Being in such a large crowd of people who shared their experiences was a delightful liberation. The air was full of a happy roar of conversation. The place rang with the laughter of people who found that everyone they met understood the predicaments they faced in their lives.

Fast friendships were formed in those few days. That was especially obvious in the gangs of children running and laughing everywhere. It was a happy time and an affirmation of their decision to take this journey. There were a few, though, who had second thoughts. As the time to leave the planet grew suddenly imminent, a few people changed their minds. They realized that they were bound too strongly to some person or place and they decided to call it off and go home. That turned out to be lucky for them and unlucky for the eager replacements on the standby waiting list.

Everyone was gathered for the final full assembly when it happened. After this they would break up into groups for assignment to their launch vehicles and the transfer to orbit would begin. When the men walked onto the stage, the speaker tried to politely usher them back off. She was smiling at them in a friendly way so it was a shock to everyone when they shot her in the head and her body dropped abruptly to the floor.

At the same time a dozen men around the perimeter of the audience discharged automatic weapons into the air. There were scattered screams and some of the children were crying, but on the whole there was silence. All eyes turned back to the stage where one of the men stepped forward to speak.

He spoke for several hours, quoting liberally from the scriptures of his theology. To his listeners it was a meandering diatribe, but his meaning soon became clear to them. They were degenerate subhumans and he wasn't going to allow them to pollute his god's celestial sphere. As it went on and on, they experienced the bizarre sense of growing boredom. Here they were trapped by armed men, and they found their attention wandering. They began to get restless, shuffling their feet and looking around. Children began to complain that they had to go to the bathroom.

Some of them spoke out, trying to point out the impracticality of the situation. Things couldn't go on like this. They shouted at the man that it was impossible. The men nearest the protesters opened fire and shot them, along with anyone unfortunate enough to be standing near them. Some died immediately and some were only wounded. Anyone who tried to help the wounded was shot.

Eventually, realizing that these men intended to kill them all anyway, they hatched a plot to overcome them. The crowd on one side rushed the gunmen, heedless of their casualties, and were able to overpower several of them and take their weapons. Then the men exploded, killing or maiming several hundred more people. Their captors were fitted with explosives.

When things settled down after the explosions, people could see that the fallen gunmen had been replaced. Who knew how many more were outside the stadium, waiting to fill in for their fallen comrades? That's when despair set in. It was worst for the children. Looking to their parents and the other adults for guidance or salvation, all they saw was the hollow look of defeat. So in the stench of gunpowder and the shredded bodies of their murdered friends and family, they awaited their fate in docile numbness.

While they were torturing their victims, the kidnappers, who called themselves God's Purity Brigade, were making their demands known to the rest of the world. They insisted that governments everywhere forbid their synesthetic citizens from ever going into space. They also wanted them to keep synesthetes out of various specified occupations, and to generally restrict their activities. In addition they wanted them sterilized as soon as their synesthesia was discovered. But most

immediately important, they mustn't be allowed to defile the celestial sphere. Any hope of a reasonable negotiation was dashed by their cruel and callous actions.

Over the next few hours they did nothing to change that impression. All their actions created a picture of fanaticism. As they rejected every attempt at moderation or compromise, people on the outside slowly lost hope for a peaceful resolution to the crisis.

Governments representing all the migrants appealed to the government of the country hosting the launch facility. They assured everyone that they were making their best efforts to resolve the situation. They made public displays to that effect, including arresting, imprisoning and torturing people, but the consensus was that they were stalling. The country had until recently had a democratic government, but a revolution had replaced that with a theocracy. There was a wide-held suspicion that it was sympathetic to the kidnappers, so no one was very optimistic about getting their cooperation.

Apparently the terrorists only wanted to make sure they had everyone's attention, because they didn't continue the negotiations very long. By the time the victims' courageous attempt at liberty ended in explosions and bloody mayhem, the man on the stage was just about done talking. He shouted a few more insults, dramatically praised his god and triggered a portable thermonuclear device.

The world was stunned. Naturally they immediately lost the video feed in the explosion, but other cameras, some belonging to news organizations and private individuals, but others obviously set up in advance by the killers, gave them a good view of the grotesque pillar of smoke and fire. It was obvious that there would be no survivors. Ten thousand people were murdered in one second.

There was something the terrorists and their allies hadn't accounted for, though, and that was the radioactive plume of dust engulfing the capital city a couple of hours downwind from the blast site. Maybe they did factor in the most likely wind direction in their original planning, but when the time came and the wind didn't oblige they decided to go through with it anyway. There would still have been enough time for government officials to flee, leaving behind a city full of martyrs, but they were trapped by a mob of protesters demanding the release of the hostages. Even their helicopters were no help because somehow or other there were several portable rocket launchers in the crowd. They had to remain in the city to suffer radiation poisoning along with everyone else.

The country became a pariah. Scathing criticisms rained down on it from all parts of the world. Even its most loyal allies put distance between them. No one wanted to be associated with such a heinous act. Everyone agreed that they had always known that no good would come of a theocratic revolution, that democracy and freedom were always best. At first nobody sent any aid or assistance. There was a righteous consensus that they had brought their troubles on themselves by letting such a thing happen in the first place. Thousands more would die for lack of anti-radiation drugs.

This phase didn't last long, though. The uprising that began in the capital city swept the country, meeting very little resistance even from the military. Within a few weeks things were so different there that outsiders began to come in again. That began a long and successful period of liberty and enlightenment in the region. The blast site was isolated and protected as a commemoration to the victims, and the country eventually regained its status as an important gateway to outer space.

Minder stopped reading and found that he was breathing fast, shallow breaths. He felt as if he had been struggling with something. This was a stronger reaction than he had ever had before to the story, and he wondered why. Even though he knew the outcome, he'd found himself hoping it wouldn't happen. Hoping they'd come to their senses and those people would be saved. Even through the dry prose of historical reporting, he found himself emotionally bound to them. He was glad he chose text with no accompanying video. That would have been too much.

This must have to do with Elgin. He was having new feelings about a familiar story because Elgin mentioned it. Naturally he would invest it with new meaning if it meant something to him.

Minder was glad, all things considered. It was a very important story and he was glad to be able to feel something commensurate with that.

But what of Elgin's reason for suggesting it? Could the Francesians really be as bad as God's Purity Brigade? Surely not. But then Minder remembered the ferocity of at least one of them. The woman. It didn't take much imagination to picture her in the story he'd just read. Mix in a few fellow fanatics and a charismatic leader and it wasn't out of the question.

Even their leader, who appeared to be more reasonable, had brushed him aside with contempt. And he'd called him a name while doing so, replacing his individuality with a derogatory cliché. That was different only in degree from the leader of the killers calling his victims filth. Their excuses were the same. For the Francesians, none of their saints had four arms. For the GPB, none of their prophets had synesthesia. A good enough excuse for rudeness in one case, for mass murder in the other.

Minder didn't think the Francesians would ever get that bad. He just couldn't equate their earnestness with the cruel brutality he'd been reading about. But the scientist in him couldn't call it impossible. And now he felt as if he was beginning to understand Elgin's actions. Imagine if something that horrendous were ever done in the name of his beloved Frances.

Minder sat in his dim rooms, feeling buffeted by emotions bigger than anything he supposed would ever happen to him.

Chapter Ten - Armful

Elgin went into the Commons to look up “armful.” The man said it with such contempt and it affected Minder so strongly that he wanted to find out more about it. There were plenty of references, so many that it was hard to choose, so he just browsed for awhile. The general drift was that it was a fairly mild taunt, usually. It was largely restricted to adults, for obvious reasons, although children were known to use it as well. As in, “Yeah, and your father's armful, too!” The retort might be, “Yeah, well yours is leggy!” But since most adults had four arms before they had children these days, that usage was almost forgotten.

What convinced Elgin that it was a generally harmless thing was the presence of limericks. He knew there could be hateful limericks but as a rule they were relatively benign, as were the ones he found in the Commons. For instance,

There once was a man who was armful,
Whose wife thought it made him more charmful,
He hugged her with two,
And squeezed her with two,
And now they have children in armfuls.

Elgin chuckled. But if “armful” was this gentle as a rule, what had made it so hateful today? He reluctantly decided he had to look up the Francesians.

As soon as the first search results came in he was caught by the sight of his own name. He saw the headline, “Elgin Blasts Frankies.” It just jumped right out at him, probably because it used his name. He knew immediately who the Frankies were. It didn't take a genius to see that it was a diminutive for Francesians. The tone of the little excerpt was clear, even in just a few words. He could tell the article was going to be very unsympathetic to them. Normally he gave such negativity a pass, but it was also about him and something that had happened only a few hours ago. He knew he had to read it.

He thought it might be all rumor and hearsay, and he was prepared for a wildly inaccurate recounting. He was surprised to find it was quite close to the truth, and equally surprised by the video. The perspective on that indicated it was taken from above, probably from one of the balconies overlooking the Square. That would explain the name of this entry in the Commons, “Eye on the Square.”

Even though the facts were accurate, Elgin felt that the accompanying opinion was unjustified. It extrapolated itself completely out of touch with reality. He shook his head to think that even real video and audio could be turned so far away from what actually happened.

The description of events was straightforward and matched the video exactly. It was the analysis of the actions of the Francesians and the motives that were imputed to them that set his teeth on edge. His sense for when things were wrong was clamoring for his attention. He knew from talking to them that they were misguided, they didn't understand their saints, they had certain prejudices and they could be unpleasant people. But this writer was impugning their character far beyond what they deserved. It even misquoted what he said to them. The audio wasn't perfect. It was far away and he was speaking quietly. But he was quite sure he hadn't said, “Why don't you make sure your saints are dead before you start telling lies about them?”

Elgin looked around and found the section where he could comment on the article. He was

alarmed to see there were over a hundred already, and dismayed to see that most of them were competing to be even more abusive than the original. He composed his thoughts and began to make his reply. He kept it short and simple, concentrating on the most important points. He told them they shouldn't call the Francesians Frankies. He told them they weren't helping either him or Frances. And he told them they'd misquoted him. He said, "You should make sure your sources aren't available to contradict you."

He checked that his message wasn't flagged to be anonymous and posted it. Everyone would see immediately that the post came from him and there could be no confusion about whether he'd really said it. Once done he signed out right away since there was nothing more for him there. As a result he didn't see the reaction he caused.

The first thing was that everyone who thought they were championing Elgin by vilifying the Francesians stopped. Some continued with the mean posts, but they had their own reasons. Then a lot of people tried to talk to Elgin through the forum, but of course he wasn't there. Then his personal message queue began to fill up and he had to tell it to flush itself and refuse new messages.

As for the Commons entry, "Eye on the Square," it enjoyed a spike in readers, due entirely to rumors flying about Elgin's presence, then the numbers plummeted and never recovered their former levels. As long as it lasted it remained a focus for those who enjoyed gossip and innuendo and peevish criticism. Fortunately, Green Comet didn't have many of those.

That unfolded over several days, but right now Elgin was still trying to learn more. He kept digging, ignoring any further distractions, until he came up with something that looked as if it might be more informative. It had some symbols, including the two comets, that seemed to indicate fact-based reporting, maybe even an official version.

He opened the site holding his breath, but it was okay. There were no images of Frances, just some of the comet icon and a few of faces, whose captions revealed that they were important figures in the church. Elgin poked around and soon found a summary of its history.

About three hundred years after the incident, with Frances in indefinite hibernation and Elgin having followed her, the church had its modest beginnings. At first there was no theology involved, just a desire to honor the heroes who had saved them at such a terrible cost to themselves. As time went by the observances of memory became more elaborate and the rites more codified. The heroes made the transition to saints, symbols were adopted, rules were established and the truth was officially identified.

Rules and truth. That's probably it, thought Elgin. As soon as you claim to have the truth, nothing anyone else says matters. And when you start making rules, using the authority of your truth, you make everyone else rule breakers. It works very well for creating solidarity within the group, but it always leads to alienation of everyone outside it. Even if they hadn't turned it into theology, Elgin thought they probably would have set themselves apart somehow. He was sickened that they invoked Frances in the service of their antisocial instincts.

He stopped reading and stared at nothing for awhile. When his awareness returned, he realized he was looking at a picture of their church. The text indicated that he could take a video tour of it. This wasn't the only place they met, but it was their main building. Their cathedral, so to speak. If he was going to understand what the Francesians thought of themselves, what they wanted others to think of them, then this building was the most likely place to go. Elgin cautiously began the tour.

It started outside on a lovely stretch of corridor. The facade was elaborately beautiful, with columns and arches carved into the ice. He could see colored windows and statuary carved in bas-relief stretching up a good twenty meters. It projected a sense of gravity and permanence.

The point of view moved up a broad flight of steps and through a large pair of doors. Once inside, the light changed subtly. In addition to the colors that would be expected from the windows,

had there been a sun shining through them, the light seemed a little brighter than usual. It was a good effect. It created an uplifting mood.

The overall impression was one of grandness. It was large and open, clean and bright, and it was occupied by happy looking people who all appeared to be moving with confidence and purpose. But towering over everything, driving everything else out of Elgin's mind, was an icon of Frances.

It was at least five meters tall, and it was looking straight into his eyes. He felt as if he'd been punched in the stomach. Her eyes, her expression, were full of love and caring, and most of all welcome. It looked so much like her that he was drawn in her direction, helpless in the grip of her attraction. But it was wrong. He knew it was wrong and his fascination was doused by nausea. He tore himself away and fled from there in blind haste.

Elgin sat in his darkened room, unaware of time passing. If not for the pain and the deep, aching loss, he would not have been aware of anything. He might as well have been hibernating. This misery was why he would have been hibernating if not for his duty to the comet. He sat in the dark, not even feeling the tears welling up and floating away from his eyes. Even after all these centuries, his body hadn't forgotten how to cry.

Chapter Eleven - Flashball

Elgin woke to the sound of someone in the kitchen. He closed his eyes and tried to go back to sleep. That's what he needed now, a few more hours of oblivion, not another day full of people he had to see and things he had to do. He gave it a good effort, but after a half hour of listening to Minder try not to wake him, he had to get up. Really had to.

When he came out of the bathroom, Minder was just putting breakfast on the table. "Did they hire you to cook for me, too?" Elgin asked testily.

"No! I mean, yes, I'm here to do for you, but I wasn't hired." Minder had a slight blush that didn't seem to know what it wanted to do. "I won this assignment!" he said, obviously flustered.

"We have a winner. Congratulations." Elgin bellied up to the table. "What do we have this morning," he said, surveying the spread.

"Would you like some coffee?"

"Does it have caffeine?"

"Your choice," said Minder, brandishing two pots.

"Amazing what they can do with algae these days," muttered Elgin. He picked up a warm biscuit and savored its aroma. No sense letting it go to waste, he thought. "Make it a half and half, black."

Minder filled his microgee cup and came over to join him. Once he was at the table Elgin couldn't see the lower half of his body. Couldn't see the arms where legs ought to be. "You don't have to hide those anymore, you know."

"Oh," said Minder, glancing down. "I didn't even think of it. You seemed to be okay with it, so I kind of forgot."

"I'm used to it," said Elgin. "Oh, it still surprises me once in a while, but it doesn't bother me." He chewed his biscuit. "What am I going to do when it starts to seem normal?"

Minder laughed. "I'm glad you're in a good mood," he began.

"When am I otherwise?"

"Hah! Anyway, I have an outing planned for this afternoon."

"What is it?" Elgin sighed. "How long will it take?" He gave Minder the eye. "There'd better not be any of those," he groped for words, "those people that we met yesterday. I swear, Minder, if one of them comes within arm's reach of me, I'm not sure what I'll do."

"No guarantees, Elgin. This is a free comet. But we have tried to impress on them that you value your privacy and it would be rude to impose themselves on you."

"Good. What did they say to that?"

"Something about how the lives of the saints aren't private property." Minder hastened to add, seeing Elgin's fur start to bristle, "But they promised to honor your request, because of your special relationship to Frances."

Elgin ground his teeth. "Fine," he growled, "I suppose that will have to do."

"There's not much more we can do. It's not as if we can lock them up or anything."

"They'd probably like that anyway. Martyrs for the cause and all that." Elgin shook it off.

"Where are we going, then?"

Minder beamed. "It's a flashball game," he said.

"Flashball?" Elgin was immediately interested. "Who's playing?"

"Your old team, the Harriers."

"They're still going?" Elgin sipped his coffee and picked up another biscuit while Minder held

his breath. "What the heck, let's go." Elgin enjoyed his breakfast.

The flashball arena was a hollow sphere of water ice, a hundred meters across. There was a good crowd there already, but Elgin and Minder had no trouble finding a place close to the ice. Other than the buttresses anchoring it to the walls and the space taken by the players' entrance, the whole surface was available for viewing, so no fan was likely to be turned away. The lack of seats and stairs and other structures, made redundant by microgravity, also freed up a lot of space.

A murmur went through the crowd when they arrived and his face was shown on the monitors, but no one approached them. Elgin's preference for privacy was well known and almost universally respected, with only the occasional exception like yesterday's.

Now another murmur, becoming a soft roar, swept around the flashball arena. The players were entering. Sixteen athletes representing each team plus four officials streamed through the entrance together, to a firm round of applause from the fans.

Everyone, players and officials, took a few laps just inside the curving, transparent boundary of the field. Some of the players were doing aerobatics, testing their moves, but most of them just flew, stretching their wings. Then the referees and team captains drifted to the center for their pregame meeting. After a brief lecture from the referees followed by the handshakes, they all seemed to be looking in Elgin's direction. He glanced at Minder as they came his way, but Minder just shrugged.

The six of them stopped in front of Elgin, while the rest of the players gathered in a loose group about five meters behind them, all looking through the ice at him. Elgin looked hard at Minder, but he just raised his palms so Elgin turned his eyes back to the apparent delegation.

One of the referees came forward a little, holding out the flashball. He raised his eyebrows and made an offering motion. A susurrant swept around the sphere as people saw what was happening, and it quickly turned to a buzz of encouragement. When Elgin realized that they wanted him to do a ceremonial toss-in, his first instinct was to refuse. The crowd moaned with disappointment.

Minder nudged him. "Come on, Elgin."

Elgin's face closed up. The officials, the players and the fans sagged.

"Come on, Elgin," pleaded Minder.

Then Elgin's face softened. With a wry smile he shook his head at himself, then turned and nodded at the referee. The crowd applauded gratefully.

Elgin made his way around to the players' entrance, flying slowly through the path that the people made for him. He responded graciously to their well-wishes, muttering his thank-yous.

He dipped through the entrance and fluttered to a stop. The referee handed him the ball and shook his hand, followed by the other officials, the captains and all thirty of the rest of them. He floated, hefting the familiar shape of the regulation twenty centimeter, three hundred gram flashball. Thousands of faces were pressed to the ice, watching with intense focus. He glanced back at Minder hovering near the portal as he prepared to launch the ball and start the game. He stopped when Minder shook his head vigorously.

"Say something," Minder mouthed.

Elgin rolled his eyes at him, but he was smiling. "Alright," he mouthed back.

He looked at the players arrayed at a respectful distance. They were about evenly mixed, men and women, and clustered at random rather than segregated by team. He cleared his throat. "Good afternoon." He paused for their response. "You might not know it, but I'm not much for speeches." He grinned at Minder in their burst of laughter. Minder's face flashed sheepish. "So I'll keep this short. I know I hated long speeches when I played."

"Some of you might be aware that I played for the Harriers, so I won't pretend to be impartial." The Falcons had to absorb some good natured gloating from their opposition as the Harriers rubbed it

in. "But it doesn't matter who you play for. The important thing is the memories you create this day, the joy of working as a team." Much nodding as Elgin readied himself for the toss-in. "So, keep it clean and create some beauty for these people." He launched the ball hard toward the center of the arena, and it flashed right through orange to bright yellow. As the players lunged after it, Elgin slipped back outside to watch the game.

"Nice speech, Elgin," said Minder. "Nice throw, too. Looks like you've still got the arm."

"Yeah," muttered Elgin, "sore arm. I think I injured my rotator cuff."

"Really? Are you okay? Do you want to go back?"

"No, I'm fine. I just need to remember how old I am."

The first half was quite tentative, with neither team able to sustain any kind of attack. The truth was, these were two evenly matched teams, and their defensive play was impeccable. By the end of the half each team had managed several minor formations and one major pattern. The Falcons held a slight lead because their major involved nine players in the pattern, the Harriers' only eight.

Halftime was about twenty minutes, usually, but it could be more if someone needed more time. The fans didn't mind. They had refreshments and there was always lots of visiting to do. Elgin chatted with his immediate neighbors and found out they were quite knowledgeable about the game, and not only the present day. They knew about his team, when he played with the Harriers many centuries ago. They even knew a few of his teammates, which gave him something to talk about.

"Yes. I remember Lewis and Rita. We called them Gassy and Dodger," Elgin said to the squat, burly man who'd mentioned them.

"Gassy? You mean . . ."

After a second Elgin said, "No, no, not at all. We called him Gassy because he talked so much, mostly trying to chat up Rita. And that's why we called her Dodger."

"I see," laughed the man, along with everyone else around them. "Did he ever catch her?"

"Yes, as a matter of fact. They ended up together. They eventually got married." Elgin's eyes unfocused and his face relaxed as he remembered the faraway time.

The burly man, whose name was Al, said quietly, "I can tell you enjoyed your time with the Harriers."

"Definitely. One of the highlights of my life." He looked at the empty globe. Seeing the patterns of players flying, passing the glowing ball in choreographed plays. The satisfaction of completing a complex pattern in spite of the other team's attempts to disrupt it. The delighted sounds from the crowd worth as much as the points they earned for a well executed play. He looked at the entrance. "I wonder what's taking them so long."

"I hope no one was injured," said burly Al.

"I don't think so," said Elgin. "There was only that one bad collision, and they both seemed fine afterwards."

"Yeah, you're right," Al agreed. "It scared the heck out of me, though." He shook his head. "I could never do what they do. What you did."

"You never played flashball?" Elgin asked, genuinely surprised.

"Oh, no. I played alright. We all played when we were kids." Al shook his head again. "I was just never any good at it." He laughed at himself and winked at Elgin. "I've got two left wings."

"I see," said Elgin. It was hard for him to imagine what it must be like, but he knew logically that there would be just as many ungifted athletes as gifted ones. "You never lost interest, though."

"Lose interest? In flashball?" Al looked around at the faces in their circle. "Hey, I'm clumsy, not crazy." He basked in a round of friendly laughter, while Elgin clapped him on the back. "But seriously, the things you real athletes do, they're a gift of beauty to the rest of us." People were nodding

earnestly. "Right?" said Al, and everyone agreed.

"Well," Elgin said hesitantly, "thanks, but we were just playing, you know, just trying to get it right."

"You did that alright. Like the Elgin Fractal." A rush of agreement from the circle, faces in awe-filled smiles.

"The what?"

"The Elgin Fractal. Your play, when you were with the Harriers."

"Oh, that. We called that pattern the Flying Fractal, actually."

"Well, it's the Elgin Fractal now. Probably the most famous play in flashball history."

"Oh, for goodness sake," sighed Elgin. "We came up with that play as a team, and all teams have their own patterns."

"Sure, but there's only one Elgin Fractal." Al drew his listeners close and spoke with hushed fervor. "A sixteen player pattern. Hard enough using ordinary geometry, but with fractal geometry it goes to a whole new level." He had their rapt attention. "Every player on the team handles the ball twice. The pattern starts large, steps down in repeating iterations as each player flies their segment before passing to the next. Then the ball is bounced off the ice and they work their way back up." They were nodding. Everyone knew this, but they didn't care. Al told it well, and they were actually here with Elgin himself. "This is a very difficult pattern in itself, but it has to be done while the other team tries to break it up." Al was shaking his head again. "And Elgin's Harriers did it while passing the ball so sharply that it was bright yellow the whole time."

"Well, actually . . ." began Elgin, but he was cut off by a stirring in the crowd. The teams were flying back into the sphere.

The players cruised slowly around the field. They all looked Elgin's way as they passed, most of them nodding if he happened to meet their eyes. Where at the beginning of the game they had been full of energy, almost anxious to get underway, now they seemed quieter, almost serious. They fell to the center, where they formed their loose phalanxes to await the toss-in. The referees were spaced around the outside, the one with the ball just inside the entrance. The lights began to dim.

Elgin looked around. "What's going on?" he asked Minder.

"I wanted to surprise you with this," said Minder, bursting with satisfaction. "There's been a small change to the rules, Elgin. The second half is played in darkness now."

"But," said Elgin "how do they . . ." He looked at the others, who were smiling. Al winked at him. "Never mind," he said. "Let's see how this works."

It seemed pitch black at first, but then their vision enhancements kicked in and they were able to see each other, even recognize their black shapes in the dark gray ambient lighting. Then they could pick up the glow of the ball as it moved slightly when the referee shifted position.

Just about the time everyone was beginning to feel comfortable with the dimness, the ball flared redly as the referee cocked his arm, then flashed yellow toward the players. It seemed to leave a trail of light behind it, to their sensitive eyes.

"Ah," said Elgin, "I see."

The second half was similar to the first in the careful play and strong defence, but there was a difference. It seemed more deliberate and determined. The players faces were more intense, with less emotion showing through. Gone were the grins of pleasure seen in the first half. Even the bioluminescence was more muted.

Scoring was minimal, with each side notching a few small, conservative formations and some minor patterns. They seemed to be able to anticipate each other's moves and break things up before they really got started. As the points slowly accumulated the Falcons hung on to their slim lead, even added to it a little.

Elgin found the new rule interesting. Once his eyes adjusted completely he was able to see more details and could tell where all the flyers were and what they were doing. He couldn't see more than the barest details of the expressions on their faces but the bioglow was almost as good, even for someone as new to it as he was. The moving light from the ball illuminated the players like a mobile campfire. The whole thing, sitting in the dark surrounded by thousands of people, watching the play of firelight beyond the ice, was magical. It was a bit like being a child up past their bedtime and Elgin took pleasure in the nostalgia.

Al broke in. "What are they up to, Elgin?"

Elgin shrugged. "Is the game more defensive now?"

"Well, a little, but these guys are playing chess," Al said, pointing with his chin.

As soon as he said that, Elgin saw the game differently. The plays the teams were making changed from discrete events into parts of a developing pattern. Something started teasing around the edges of his brain, a vague itch that wouldn't hold still to be scratched.

"Elgin," said Al, nudging him gently. "What is it?"

"Hm?"

"You're thinking something," Al insisted. "Do you see something I don't see? Are they up to something?"

Elgin looked at him, but Al could tell his focus was somewhere else. "No," said Elgin. "At least, I'm not sure." His gaze fell back to the playing field where it took in the moves and countermoves, absorbing everything as a whole. His mouth moved slightly as he watched. Al closed his mouth and let him be.

Over the next few minutes Elgin thought he was beginning to see a pattern. Literally. He was increasingly sure that he could detect a method to the way the Harriers were playing the game. They were grudgingly ceding a few points here and there to the Falcons, but a certain persistent asymmetry was forming in the overall disposition of the players within the sphere.

The Harrier captain threw a long ball, then took off in a beeline for the other side. The throw was caught and flung on. One more throw and the first quartet was nearly finished before the Falcons caught on.

Elgin wasn't fooled, though. He recognized the opening stanza of the Flying Fractal and began anticipating the players' moves. That's where he did get fooled. Centuries of familiarity meant that defending against it was in everybody's play book and it was rare for it to get beyond the second stanza, the third at the most. It had become a tradition of sorts to try it once in awhile and it was almost ceremonial. Something teams did to please the fans, because they really liked to see it. They were getting excited now as they recognized the familiar opening movement.

Defending against it came down to adopting a one on one strategy, a change from the usually structured team play. With someone dogging everyone it was just a matter of time before a pass got picked off. The Falcons did that and the Harriers kept to their predictable ways until the second stanza was one throw from completion, then the dynamic arrangement of flyers changed unexpectedly, the wrong person caught the ball and the fractal went off in completely the wrong direction.

In the confusion the Harriers quickly completed three small stanzas before the Falcons adjusted. The crowd was busily adjusting, too. They were so used to what they expected to see that this flouting of tradition had them off balance. But they were thrilled, too, and watching intently. They might not be doing it the way they were supposed to, but the Harriers were five-eighths of the way through now. Much further than anyone in recent memory, and only three more quartets of players left to handle the ball.

Al glanced at Elgin to see how he was taking it. Doing this was almost a betrayal of the Elgin Fractal, but he saw a pleased little smirk on Elgin's face. Al grinned and went back to the game.

The Falcons adjusted well and were closing in again, but this time the Harriers deviated halfway through the sixth stanza and that bought them the time they needed to bring it all the way down to the last two throws. The first, a long blistering bright yellow bullet toward a point chosen by the captain for her final reception. She was on her way there, timing her arrival, when she noticed the Falcons captain heading for the same spot. She veered slightly and gave a few hard thrusts to catch the ball a little sooner, but her opponent did the same thing. As the crowd held its breath, the two captains bore down. It was hard to tell who would get there first, but they knew it would be close.

At the last instant, before what would certainly be a hard collision and the end of a hard-fought pattern, the captain pirouetted under the ball's flightpath and plucked it out of the hands of her opponent. The crowd gasped then drew in its breath again as she rolled into a throwing position and hurled the ball in a nearly white streak toward Elgin, who had his hand on the ice for a target.

All eyes were on the ball and no one was breathing when a flyer streaked into view, a Falcon who had anticipated this and was driving hard for the point of impending impact with the obvious intention of knocking it away to break up the play. The smile on Elgin's face grew as his eyes darted between the ball in front of him and the Falcon to his right.

The ball and the flyer arrived simultaneously, with the ball being knocked back into the field and the player sliding partway around the wall before catching air with his wings and soaring back toward Elgin. The play was so close that nobody was sure whether the ball had hit the wall to complete the pattern. All eyes turned to Elgin as the lights slowly came up.

"Ah," he said, glancing at Al who was looking speculative. "Hm," he said, looking at Minder who was trying to look bland. "Alright, then," he said, heading for the players' entrance. The crowd parted almost silently, the air charged with unspent emotions. Elgin saw a lot of different colors in their bioglow and, although a novice at reading it, he could tell they were still charged up by the thrilling finish to the game, and frustrated by its anticlimax.

He wasted no time getting inside, where they gave him the ball and fell back to await his decision. He looked at them and said, "Hello again. First, thank you all for a well-played game." He cocked his head at the Harrier's captain, saying, "And an interesting one," obviously referring to its unorthodox final pattern.

While everyone laughed politely he looked at the two captains floating near each other and winked at them. "Thank you for the beauty you gave us today. Everyone." He gestured to the players and the officials and led the house in a heartfelt round of applause. "Now it is my honor to decide whether that last pattern was completed or not, as a sober judge and impartial witness."

While the place rang with laughter, bursting from thousands of lungs in a gust of relief, Elgin waved the two captains over. With their three heads close together Elgin told them what he'd seen, and they both agreed with him immediately. He shook their hands, gripping each long and firmly and thanked them again.

As the laughter trickled away, Elgin held the flashball high, capturing their immediate attention. "I declare," he said loudly, "that the Flying Fractal formation attempted by the Harriers today," he continued, ignoring the few shouts of 'Elgin Fractal,' "was not only the most beautiful thing I've seen in far too long, it was also the first successfully completed Flying Fractal in just as long." He looked at Al, who nodded sharply in the wave of cheering that rose around him.

Elgin patted the air to quiet them a little. "So it's my honor and pleasure to present this game ball to the Harriers, a new legend for a legendary team!" Then everyone, including all the players and the referees, indulged themselves in a flood of thanks and congratulation.

Back at Elgin's rooms the two of them were preparing dinner. Elgin was quiet. He'd hardly said a word since leaving the game, so wrapped in thought that he didn't notice Minder stealing glances

at him on the flight home. Now, though, he felt his gaze and looked at him, causing some flustered flickering. "What's up, Minder?"

Minder's mouth opened and closed twice, then he took a breath. "You haven't said much," he started, "since the game." He looked worried. "Are you mad at me?"

"Mad at you?"

"Yes. For making you go. And give a speech. And all those people." He reined himself in. "I mean, did I do the wrong thing?" He looked comically pathetic, knew it and hated it.

"No!" said Elgin. "Goodness no. I'm glad I went."

"Really?"

"Yes. And I'm glad I met those people." Elgin was animated by the memories he knew would stay with him. "In fact, Al and I have a date to go to the next Harriers game."

"Wow. So it's alright then."

"Yes, Minder, it's very alright." Elgin touched his arm. "I hope you weren't too worried."

"No, not really. I just wasn't sure, and you weren't talking."

"Sorry. It's just that everything that happened today, well, it got me thinking."

"About the days you played, and the Elgin Fractal?"

"Yes, but it's not just that. And it's Flying Fractal, or whatever name the team wants to give it. They didn't do an Elgin Fractal today, they did something entirely their own." Minder nodded sagely. Elgin rolled his eyes. "Anyway, it made me think about my life."

"Good thoughts I hope."

"Yes, and it's thanks to you for getting me out of myself. I know I haven't been the best of company." A quick glance was enough to stop Minder from nodding some more. "I was so wrapped up in missing Frances that I forgot what I learned from her about people. She always had time for people, no matter what. It's what we all love her for, and my selfish misery has kept me from honoring that." Elgin was beaming. "Thank you for making me go to that game, and for making me get involved."

"You're welcome."

"And it tasted good, too. Especially the second half."

"That's something, eh, with the lights?"

"Really something." Elgin smacked his lips. "Let's eat."

Chapter Twelve – The Visitor - Introduction

The Visitor was first seen by comet spotters. There were thousands, maybe millions of people who watched the sky every night. It was a holdover from the disaster several centuries earlier when the planet had its close encounter with the comet. Sky watching began in earnest then and never let up since. Together with the official planetary observation system that kept a vigil on behalf of the people, the amateur astronomers mapped every moving spot of light in the system.

The Visitor didn't reveal itself in the normal way of comets and asteroids, by moving relative to the distant stars. It stood out because sometimes it was there and sometimes it wasn't. The spot would show up in one set of images and not in the next. It was as if the steady light of the stars and the slowly moving lights of asteroids and comets were joined by another kind that blinked on and off.

The blinks came in a cluster that appeared for a span of a few weeks, then there was a hiatus of a few years. By the time they came back, people were ready to relegate them to some unexplained anomaly. A cottage industry of speculation built up around them as astronomers tried to find a place for them in their cosmology. Nothing in their models could produce such a phenomenon. They hadn't been able to get enough data to even begin to determine their origin, so they couldn't say if the light was coming from the local system, from a distant galaxy or anywhere in between.

When the blinks were spotted again they only appeared for a few days, then they were gone again for over a year. This time though, they managed to extract a little bit of useful data from them. The light source was moving very slightly against the distant stars, but it wasn't moving relative to the nearer stars around it. Astronomers knew that the closest stars were formed along with their own Sun and that they were all moving in the same general direction. This would seem to indicate that the source of the blinks was in the close stellar neighborhood.

That was another crucial point. It really was a source of light. They weren't seeing light that was being reflected by some object, it was being produced there. And this time they had enough data to confirm that the light itself was in a very narrow band of the spectrum, and that it was coherent. Finally, although this conclusion was more tentative, some observers were reporting that the intensity of the flashes was higher than it was in the first series. If this was true then the source was either getting stronger or it was getting closer.

Chapter Thirteen - The Visitor Stops Blinking

Because comets are not permanent members of the local sky, but only come and stay for a short while before leaving again, they were sometimes historically called visitors. For that reason it was natural to call this strange newcomer a visitor. It was from away and it seemed to be coming toward them. Even though it was obviously not like any comet they had ever seen, its actions were similar enough that the name got stuck to it.

It continued to show itself in brief periods of blinking separated by years of nothing. As the data slowly built up they were able to detect a weak trend. On the whole, the time between clusters of blinks seemed to be decreasing slightly and the number of blinks per cluster, the duration of each blink and the duration of the clusters were increasing. Astronomers, cosmologists and physicists were at a loss. No object in their models of the universe acted this way. No alternative model of nature could produce such a phenomenon and still describe a realistic universe.

Finally they had to consider an explanation that had been growing among the non-scientific population from the beginning. It was an explanation that they reflexively rejected, but now that other, more rational ideas were plainly inadequate, they finally began to consider it. Given the coherent and monochromatic nature of the light, they had to ask whether its source might be artificial.

Once they allowed themselves to think that way, the ideas started to flow. The first thing they had to admit was, if the source of the light was artificial, then there must be some agency behind it. And if there was somebody out there blinking laser light at them, then the most economical explanation had to be that it was intentional.

Certainly there could be other reasons. It's possible that they were pointing the laser at something else and it just happened to also be visible here. Or they were doing something else entirely and this was just an accidental side effect. But the fact that it continued to happen for years argued against that. How could points separated by light years of space – their calculations showed that the most likely source was a yellow dwarf star six light years away – stay lined up like that? Much the same argument worked against accidental leakage.

The obvious conclusion, though arrived at reluctantly and with much controversy, seemed to be that someone was trying to communicate with them. Some intelligent beings living just six light years away were using a giant laser to try to talk to them. Did they know there were people living here? Maybe they had detected some of the electromagnetic energy released by their technological civilization. Maybe they were just guessing. No matter. The objective now was to decipher the message.

That was easier said than done. Years of work by scientists around the world yielded nothing. The light was monochromatic and the color never changed more than could be explained by random fluctuations in the density of interstellar dust. Any variation in intensity was explained the same way. The polarity of the light was constant. All that remained was the blinking, and other than the weak trend already identified, there was nothing there. If there was something encoded in the blinking itself then it would have to be a pretty simple message. There just weren't enough blinks to add up to much, no matter how you analyzed them.

The frustration continued even as they gathered more data. No matter how much they accumulated they could never make any sense of it. Then something completely unexpected happened. One day the light blinked on and never blinked off again. This started a whole new round of speculation. Maybe the source was slewing around. Coherent light makes a pretty narrow beam which would be very difficult to train on a target so far away. Maybe the blinks were caused by the beam

striking them as it swung by, zeroing in, and now it was steady because they had finally locked on. If that was the case then maybe now there would be a proper message. But it wasn't to be. The light remained bland and uninformative.

That is, no more informative than before. There was one variable that continued to change. Just as the blinks had slowly increased before, now that it was no longer blinking there was a weak trend in the intensity. It varied minutely, increasing and decreasing in the same random way that the blinks had appeared and disappeared. And now there was also a barely detectable increase in overall intensity. A very slight upward trend in an otherwise haphazard scatter of data points.

This was going nowhere. It was more than two decades now, and they were no further ahead than they were when they first saw the Visitor. For all they could get from it, it might as well be a firefly out over a meadow. Worse than that. At least with a firefly they had some idea what it was up to. This thing was incomprehensible. How could something so obviously artificial display so little evidence of intent?

That's when they reached a consensus, almost without discussion, that they should try to communicate with it. They would build their own laser, which was easy enough since they were already using similar technology for light sail propulsion. They would match the frequency of the Visitor's light as closely as possible, to show that they understood at least that much. Then they would shine it out into space. Only, their light would be full of information, such as sequences of prime numbers, to unambiguously let the Visitor know, if there was any intelligence there at all, that there was someone here.

It had absolutely no effect.

Chapter Fourteen - The Visitor Is Revealed

For a space-going species there was no question that they would go out there. They couldn't just sit and wait when they had the means to do something about it. They had people occupying almost every comet of any size in the system. There were crews in the outer fringes working at diverting comets that were calculated to pose a threat to their planet thousands of years in the future. There were three large comets occupied by people who were living on them for hundreds of years as they went through a complete orbit.

Red Comet, the first of its class, was about to re-enter the realm of the planets and would soon be close enough to home for people to return to their planet if they wanted to. In just over two hundred years its population had doubled to about two thousand, and it looked as if most of them were going to opt to stay with the comet for another orbit.

Orange Comet, which started with two thousand people and had already doubled that, was approaching aphelion and wasn't concerned with what they might do in hundreds of years. Unlike the people of Red Comet, who survived by adapting their comet, those living in Orange Comet were experimenting with adapting their bodies. Conserving energy was crucial to living successfully on a comet, so they had fur for warmth. To see in lower light they had slightly larger eyes, lenses a little closer to the retina, and a tapetum to reflect the light back through the photocells. They were always considering other changes.

Yellow Comet had a planned population of ten thousand. Red and Orange before it had established that large comets could support a few thousand at least. They both recommended starting with more people, because it was possible and because they could use the extra hands for the work involved. Red Comet had found itself working far too hard with only two hundred people available at a time and had to accelerate the hibernation cycle to have more awake. Orange doubled the initial numbers but still found they could have used more. With no shortage of eager migrants and the knowledge acquired by its predecessors, Yellow decided to take ten thousand.

Unfortunately God's Purity Brigade had other ideas, so that decision only meant that more people would die.

After a period of shock and mourning, the timetable for the next comet was moved up. The advance crew had already prepared it during its inbound phase and it was decided that it would be a waste of effort if they didn't use it. An intense campaign was able to prepare and assemble another ten thousand people with just enough time to catch it. The transfer vessels were available and the ships were waiting at the Lagrangian point.

There was some discussion about the name. Should they still call this expedition Yellow, or move on to the next color? Finally they agreed it would be best to honor Yellow Comet by leaving a hole in the sequence, and so Green Comet it would be.

Green Comet was well past its ascending node, on a retrograde, hyperbolic orbit, just outside the planets. Its orbit was at a fifty-four degree angle relative to the rest of the system, so its perihelion was south of the ecliptic and within a handful of astronomical units.

Elgin and Frances first met while working on Green Comet, during their first waking. Both had been among the eighty percent of the population that began the voyage in hibernation, so they started out with the fur and vision adaptations already effected while they slept. They had some further enhancements to Orange Comet's vision modifications, with more rods near the center of vision and changes to the retinal light sensing compounds to make them more sensitive.

Frances was only in her early thirties when she was put on the planning committee, but that

didn't surprise anyone who knew her. She had an apparently effortless ability to take in complex ideas and make decisions. She also had an easy way with people, who all seemed to love her. Elgin, one of her lead engineers though only in his late twenties himself, fell for her immediately. But that's a later story.

The people's substantial experience with space led naturally to the decision to mount an expedition to learn more about the Visitor. In less than five years they were on their way and in about twenty they were as far out as the Kuiper Belt, though considerably south of the ecliptic since the light was coming in at an angle to the plane of the planets.

During that time the light had evolved even more. The source, which they had been associating with a yellow dwarf star, was now known to be drifting slowly relative to the star field. It could not be associated with any visible object in its present position, but tracking its trajectory back showed it intersected exactly with the star they had originally identified.

In addition, the intensity of the light was still increasing. There was a great deal of speculation about that, although the answer that immediately leapt to mind seemed too incredible to say out loud. Nevertheless, soon everyone was talking about it. The simplest explanation, therefore the one which should be favored even by scientists, was that the source of the light had left the star and was moving in their direction. The star and its neighbors continued moving against the distant stars as they always had, but the light was on a new course, directly toward them.

On the envoy vessel there was naturally a great deal of discussion about the latest developments. The crew consisted not only of the usual navigators, engineers and technicians. This was a unique flight of exploration and discovery, so the roster included scientists and other observers who wouldn't normally be there. It also had quite a few journalists who had competed hard for the privilege. There were even a couple of rich, famous people who had bought their passage with money, reputation and favors. Such was the nature of the voyage though, that even they pitched in as part of the team, rather than being the prima donnas many predicted. The only flaw in their behavior was that they both resented not being the only famous person there.

Being on a ship heading out of their solar system and into deep space, they were naturally less astounded than most to learn that the light source was moving away from its star as well. They soon found themselves assuming that it was a vessel of exploration like their own, and they looked forward to learning more about it, even hoping to one day meet the beings who had built and launched it.

The next change in the light was more surprising than any that had come before it. They were only able to see it because they were so much closer to it, and even then it was maddeningly unclear. The spot of light, always assumed to be circular in cross section, was beginning to show hints of a crescent shape.

As with previous additions to the data, this one did as much to confuse as enlighten. What kind of light source was crescent shaped? That was light reflecting from a sphere, such as one of their moons. Did that mean that they weren't looking at light coming directly from the source, but rather reflected from a sphere? To be a thin crescent like this would mean that the source of the light was further away still, and that an incredibly powerful laser was being shone on a sphere for some reason. And the angle would mean that the laser wasn't being pointed in their direction after all. But it would also mean that the light, after being reflected, somehow maintained its coherency. No one could come up with a way for that to happen, unless the sphere was specially engineered to make it so.

The ship ventured on, setting new distance records with every kilometer it traveled. It was all a routine by now for the crew, in spite of the novelty and the mystery. Everyone alternated between waking and hibernating, working with a mixture of familiar people and new faces each time they were

on duty. They were approaching the heliopause and termination shock when the next two surprises came a matter of months apart. First the light started fluctuating in intensity again, then it finally resolved itself. It wasn't being reflected off a sphere. The crescent wasn't reflected light at all, it was light being blocked by something circular. The impression of a crescent wasn't formed so much by the light as by the darkness where the light was blocked.

Once they realized that, they began to concentrate on the area around the light instead of just the light itself. A couple of weeks of intense observation revealed a shadow that occulted background stars as it moved slowly across them. It looked as if a circle of black was between them and the light source, blocking all but a little bit on one side. And now that little bit of light was changing its intensity with a periodicity similar to its blinking a few decades ago.

This new information had the ship buzzing, and it had just as much effect back home when their message got there seven hours later. This was even bigger than the strange light, bigger than realizing that it was artificial. This was seeing an actual object out there in interstellar space. No one, or hardly anyone anyway, questioned that this new object was also artificial. Something this intimately associated with that light was definitely of a kind with it. But why was it blinking again?

On the ship they began waking everybody. Hibernation was a good way to pass long periods of time, but everyone had made it clear that they wanted to be wakened if anything happened. Finding what they were looking for certainly qualified for that.

It quickly got boring again, though. Nothing else changed for long stretches of time. Just a patch of darkness with a bright laser light peeking around it. The only excitement was when their exhaustive measurements indicated that the dark blob was very slowly growing.

It wasn't long after that that the idea came to them, and once they had it they felt foolish for not thinking of it earlier. They had accepted that the light was artificial, assuming that someone must be trying to communicate with them. Now they had taken the black object to be made by the same people who were behind the light. They couldn't believe it took them so long to put the two together, but now it was obvious that the object blocking the light must be a light sail.

Once they realized it, everything fell into place. The blinking that first drew their attention to it was caused when the alignment of the beam wandered off true, then was corrected for. Eventually the beam got bigger than the sail. No matter how tight it was, the beam would spread slightly with distance. The wandering and course corrections continued, accounting for the variations in intensity after the light became continuous.

The crescent effect must be caused by the beam being just slightly off center with the sail. The light was leaking around one side of it. From a distance it would still look like a point source, but once they got close enough they were able to see that it was asymmetrical.

They had been sending daily reports with collated data and commentary, but now they started streaming everything back to the planet in real time. This was what they came out here for. This was why they had spent over twenty years traveling so far from home. Now maybe they could get some of the answers people were looking for.

Every telescope on the ship was trained on the artifact, but they weren't getting much information. After discussion with home they decided that they would try to make contact again. They spent two days composing what would be the most important message ever sent, much of the time trying to decide what medium to send it in. In the end they opted for a broad spectrum radio signal carrying their greetings and welcome, along with a few simple mathematical progressions. They didn't expect the Visitor to understand the content of the message, but they were hoping they would get the gist and reply in kind. They waited a full day and got no response at all.

That settled it. Their telescopes had managed to reveal another shadow attached to the light sail as it occulted background stars. They naturally assumed it was a ship and, allowing for perspective, it

appeared to be about one fiftieth as long as the sail was across. But they couldn't estimate its actual size or even how far away it was. They decided it was time to do some radar sounding.

They were disappointed when they got no echo, but they soon realized that the lack of information was, in this case, a form of information. It showed that the thing coming toward them had to be enormous to be visible at such a distance. They did some calculations, as did the people back home. They factored in the bits of data they had, made some reasonable estimates for what was missing and came up with some numbers. They were all over the graph, but a good many of them formed a cluster and they agreed it was a good first approximation. It was astounding, almost unbelievable, but so was the fact that it was crossing interstellar space. If they were right then the sail was about a thousand kilometers across. That would make the vessel twenty kilometers long.

Once they had an estimate of its size, that gave them an indication of its distance. Some more guesses and logical assumptions put its speed at about five percent of the speed of light. The implications of that shocked them. Assuming that all their calculations were correct, the mysterious Visitor, an enigma for decades, was only a few months away. Even if they were wrong it was surely not more than a year or two.

They sprang into action. If they did nothing the two ships would hurtle past each other at a sizable fraction of the speed of light. They had to reverse thrust. Even at full power it looked as if they would overshoot, but they had to make the effort anyway.

Over the next few months, while their ship tried to burn off its speed, they continued to examine the approaching behemoth. As it slowly resolved itself in their telescopes, they thought they were able to detect a slow change in its speed as well. It was reducing. It was barely discernible, but over time it showed itself to be real. The conclusion they reached, along with the people back home, was that the Visitor was aiming to drop into their solar system.

Everyone was watching it unfold in the continuous stream of data and images coming back from the ship. That meant there were many eyes to share the experience and many brains to try to figure it out. So when they had an anomaly, instead of it simply being dismissed as a glitch, there was a much more interesting explanation brought forward. There were a lot of people throughout the system who had experienced just about everything there was to experience in space. One thing they did a lot of was look at objects from a distance. Not quite the distances the envoys were subject to out by the heliopause, but still pretty good analogues. When they heard that the Visitor changed shape, that its outline now differed by one or two pixels on one side, they had an idea what it might be. They had often seen the same thing as two objects, one large and one small, merged or separated at the limits of their visibility. The small one they couldn't see at all and the large one just seemed to subtly change shape. They guessed that a smaller vessel had detached from the main one.

That piqued everyone's interest, but it turned out like all the previous times. While it looked as if they were finally going to learn something about the Visitor, there followed another period where they were given nothing new. All through the system people's attention turned back to everyday matters, and they only glanced occasionally at the feed being relayed to them.

Periodically the envoys tried the radar again, never expecting anything. They knew how far apart they were and they understood the inverse square rule. They only kept trying from an abundance of caution – they didn't want to miss anything – and because it was better than just waiting. Their attention to detail paid off for them. One day they got a little blip, then nothing for the rest of the day. The following day the blip was back and, after a bit of intermittence, it stayed.

They got plenty of information now. They had distance and speed. They could compute its course. They knew its size. The target on their radar screen wasn't the big vessel. This one was only about a hundred meters long, not much bigger than the envoys' own ship. This must be what they saw separating from the big ship before. This little ship must have been sent to make contact.

Abruptly, the data stream started to break up and there was a final, desperate voice message from the envoys. “They're attacking us. They're . . .” And they were gone.

Chapter Fifteen – Elgin Meets Stanton

The populating of Green Comet was done in such a rush that the assignment of hibernation rotation had to be done by lottery, only taking the time to make sure that no families were broken up. Even then some friendships suffered because they had to apply an arbitrary cutoff in deciding. One went down and the other stayed up, unless the one staying up opted to start the voyage in hibernation.

None of that concerned Elgin. He was on his own so whichever shift he drew was alright with him. There was no one among the ten thousand that he couldn't bear to be separated from because he wasn't that close to any of them.

He was here on his own because there wasn't anyone to come with him. His mother died when he was young. It was something sudden, some accident while she was skiing with his father. Elgin never heard much about it because his father wouldn't talk to him. He was an only child and they weren't close to their relatives. His friendships were good, but that was all. Most importantly, by his mid-twenties he hadn't met a woman who could have made him stay.

So Elgin started the adventure in hibernation. He drew the fifth rota, meaning he would be asleep for eighty years before he had his first twenty years of active duty. While he was sleeping, the first four shifts would secure and consolidate the habitat that was prepared by the advance crew, and begin the construction of further expansion. They made the comet habitable, well on the way to comfortable. It was nearly a self sustaining ecosystem.

By the time Elgin got up the majority of the big projects were done. The living areas were excavated and sealed off and were filling up with buildings. The corridors joining the cavities were finished and airtight. The plumbing was operational and just needed a little fine tuning. Air circulation and temperature control were almost completely automatic. The hydroponics were self sustaining, providing a continuous supply of food, supplemented by the meat lab where they were forever perfecting texture and mouth feel. And, to everyone's delight, the algal mats were healthy and spreading on the walls. Everyone loved the fruiting bodies that were engineered into the algal genome, the iceberries that they could pluck and eat any time.

Iceberries weren't just a sweet snack. In addition to a good sugar content, they also had fat and protein and vitamins. They were the closest thing ever to a complete food. Nutritionists predicted that a person could live a normal life eating nothing but iceberries. Parents never worried whether their children were eating properly because they always had the ideal snack growing on the walls. In addition to all their other redeeming qualities, iceberries tasted good and had the most delicious aroma.

Everyone who started the trip in hibernation woke up with fur and enhanced eyesight. Elgin's cohort was the second to have wings. When they went to sleep they didn't know they were going to wake up with wings, but when the idea looked achievable everyone who was awake at the time agreed that it would be best. They would be making modifications to the bodies of people who had no say in it, but they knew that was how they would have wanted it if conditions were reversed. If they woke up to find that they could have had wings but didn't, they knew they would have been disappointed.

On the whole the ones who woke up with them were delighted. After the surprise and shock they saw that it was a good and useful modification, especially after using them for awhile. Elgin certainly had no problem with it, and most people agreed it was a good idea even though it was done without their consent. But not everyone.

A small but significant minority protested that it should not have been done without their permission. Only a handful felt strongly enough to demand a return to hibernation, but such was the common sense of justice and freedom on the comet that they decided no major changes would be made

to anyone's body without their conscious approval from then on.

Elgin's first experience of waking from hibernation was nothing like waking from ordinary sleep. It took longer, it was very disorienting and at times it was decidedly unpleasant. First there was the grayness and the realization of being aware of it. No prelude. No consciousness of any kind of anything before, and then a gray world that felt as if it had always been there.

Soon there were flickers and flashes of bright light, always in his peripheral vision, never where he was looking. And that was a novel concept, that he could be looking in any particular direction. It immediately divided his vision into what he was looking at in front of him, another new idea, and other things that he couldn't see. While the bright white lights were at the periphery, the splashes and explosions of fractured color came in his central vision. They caught his attention and held it because they didn't seem random. He was sure the colored shapes had meaning. He thought he could see purpose and intention in their relationships and their movements.

Elgin was also experiencing smells, but they seemed to get in under his cognitive awareness. His brain knew they were there and his body no doubt reacted to them, but they didn't bother his conscious mind with it. But with the skin there was no overlooking it. Sharp pricking sensations jabbing random parts of his body at unpredictable times. Wandering waves of itching. Tingling and numbness trading locations haphazardly.

As strange as these sensations were, the one that struck Elgin the funniest happened deep down at the bottoms of his ear canals. By this time he was conscious enough to locate it as part of him. The time of not knowing enough to separate his self from his sensations was over, so he was able to recognize it as sound and to tell that it was happening inside his ears. He still couldn't make it out, but there was something about it that was reassuring. The tone and cadence made him feel safe and well cared for. But it still sounded funny because, at least for the first few minutes, instead of appearing to come from an outside source, the sounds were tiny and all gathered down by his eardrums. Elgin drifted off to sleep wondering about the nature of reality as it's assembled by the brain. How our sensations become our perceptions.

He alternated between sleeping and waking for the next few days. Each time he woke up his senses were closer to normal, and each time he slept his dreams were less chaotic. He met the man who was looking after him, learned his name was Stanton, recognized his voice as the comforting noise from the first day. When he was able to organize the croaking and gargling in his throat into a serviceable voice, he asked Stanton if that was his first name or his last. He learned that everyone was using single names. They might choose their first name or their last, or they might make something up. They called their chosen name their comet name and it was their identification for all purposes.

Stanton, whose name was pronounced with a glottal stop, attended to Elgin effectively and efficiently. He gave Elgin what he needed at each stage of his waking, both providing for his physical needs and answering his questions clearly and completely. He explained that each citizen of the comet was required to do this for at least one other, so that everyone got a sense of how important it was. But he added that he'd specifically requested to be Elgin's minder, as the job was called. He'd studied the dossiers of many people and learned that Elgin was an engineer, and a very good one. His record showed a level of understanding that normally only came after many more years of experience. Though only in his mid-twenties, Elgin had the competence, and had taken on the responsibilities that a good career engineer usually didn't have until his forties. Stanton explained that he was the lead engineer on the project to join the comets and that he wanted Elgin on his team.

"Me?" said Elgin. "Are you sure?"

"Sure enough to be your minder," said Stanton. "Sure enough to put you on the job." He smiled. It was friendly but a little hard, too. "Whether you stay will depend on you."

Elgin swallowed. "But there must be plenty of other engineers. Ones with experience."

"You mean older?"

"Yes, but I really mean experience with comets."

"I've got a few of those," Stanton said, nodding. "And they're good at their jobs, don't get the idea that they're not. But I need more than that. I need someone who can see beyond the plans. Someone who can imagine doing the job a different way if necessary." He smiled again, but this time it had a bit of a challenge in it. "Most of all I need someone who can look at my work and tell me when I've made a mistake."

"Oh," said Elgin, not quite sure if he wanted this challenge.

"I've checked, Elgin. Every place you've worked they've given you glowing reports."

"Yeah, well . . ."

"More importantly, there were a couple of controversies. And some resentment among other, older engineers."

"Well . . ."

"You disagreed with them, didn't you?"

"Well, I just . . ."

"You told people who have years more experience than you that they were wrong, didn't you?"

"Yes, but . . ."

"Never mind, Elgin. I checked. They were wrong." Stanton had a wicked grin. "They were wrong and you knew that and you didn't let a little thing like respect for your elders stop you from telling them."

"No. I mean, I couldn't." Elgin shrugged helplessly. "It was wrong."

"And that's exactly why I need you."

Elgin slid gently into sleep. He was doing a lot of that. These few days seemed to be spent either waking up or falling asleep, with much less time spent conscious than not. He could feel himself smiling as he faded out. This was wonderful. He was offered a job, not only doing what he enjoyed most, but doing what must be one of the most challenging engineering projects ever attempted. What interesting problems there must be in joining two huge comets. And he'd be working directly with the lead engineer. And he'd been chosen specifically, hand picked for the job. Elgin had plenty to feel good about and he allowed himself to thoroughly enjoy the feeling as he fell into soft slumber.

Chapter Sixteen – Elgin Has Vertigo

Elgin wasn't ready for the vertigo. Not that he hadn't been warned about it. Before entering hibernation at the beginning of the voyage, their orientation had made a point of it. Everyone was fully aware of the effects of waking from the long sleep, after the body's senses have been inactive for so long. Stanton had reminded him just yesterday, and Elgin had already experienced how odd sensations could be when they were first rediscovered. And he'd already suffered the effects of vertigo, the room spinning when he tried to lift his head.

Still he wasn't ready for the vertigo. Experts on the subject generally agreed with the hypothesis that the systems involved in perception didn't return to proper functioning smoothly or in a coordinated way. In the case of the sense of balance, the motion sensors in the inner ear might stutter to life and start sending signals to the brain before it knows what to do with them. But once the person relearns how to process it, they just get a little dizzy if they move their head too abruptly. The proprioceptive sense of balance was a different matter. It was more primitive, being concerned with the position and orientation of the body. When it came back to find itself in microgravity it reacted with a rush of panicky demands to the brain.

The third day was usually the worst, although it varied with each person. Elgin was right on average. He felt different as soon as he woke up, but it wasn't until Stanton came in the room that all hell broke loose. All he did was move his eyes a little to look at him and his universe spun itself to pieces. He had to close his eyes to shut out the vortex, but his inner world was a wild gyre too. It was a good thing that wakers didn't eat anything for the first few days, or it would be even worse.

But that was only the surface of it. His proprioceptive sense had just awakened with a spike of power, and it became aware of its situation with the same sporadic confusion as the rest of his senses had. Until it found itself, it could only be sure of one thing. In the microgravity it was certain it was falling. It bombarded his brain with desperate messages, uncontrolled torrents of mortal danger.

Elgin still had one little pocket of rationality where his mind could find refuge. In there he knew that the danger wasn't real, that this was normal and expected. But he couldn't convince the rest of his brain of that. It was reacting to the amplitude of the warning from something with much more seniority than his cognitive self, and it did so with a matching level of terror. Stanton glanced at the readouts and administered a strong sedative. Elgin slid into sleep with relief.

After a few hours of thankfully dreamless sleep, Elgin woke to find Stanton still at his bedside. He felt as if he'd just been out for a minute, such was the power of the drug. He had a panicky moment when he felt some persistent effects of the vertigo, but he was able to quell it. His body must have acclimatized somewhat while he was out.

"How are you feeling?" asked Stanton.

Elgin's eyes naturally moved to his minder's face, causing a little swell of dizziness. He grabbed the bed with both hands, but it passed just about right away. "I think I'm okay," he said.

"Good. That hit you pretty hard, didn't it."

"Bloody right." They shared a wry chuckle. "The orientation couldn't prepare a person for that. Is it always that bad?"

"From what I've heard, and experienced," Stanton added, winking, "this is about average. Maybe a little worse." He saw the near disbelief on Elgin's face. "Really," he said. "Some people have to be kept sedated for days. Everyone eventually gets over it, though."

Elgin was grateful for small blessings. He couldn't imagine enduring several days of that raw fear. As it was, he wondered if he could face future hibernations, knowing what their wakings would

bring.

"Don't worry," said Stanton. "According to Red and Orange comets, the effect is greatly reduced after the first time."

"That's a relief," said Elgin. "I feel okay now, but that was just awful. I don't think it would be easy to convince myself to go through that again."

"Same here," chuckled Stanton. "But you're actually still going through it, technically," he said, glancing down.

Elgin realized that he was still gripping the edges of the bed. He tried to let go but his hands wouldn't obey him.

"You're still getting a small dose of Equilibrium. Your body is just about as scared as it was before, but it shouldn't be bothering you too much."

Elgin checked and found that it wasn't. "How long before I'm completely over it?"

"Usually by the end of the third day people are off the drugs, although some people still need something for the dizziness for another day or two."

"So I'll still be dizzy tomorrow?"

"Probably." He saw Elgin wasn't happy with that. "It will be mild, though. And once you're up and moving around it goes away pretty quickly."

"I'll be able to get up tomorrow?"

"You'd better." Stanton grinned at him. "I want to put you to work."

"I look forward to that." Elgin looked around the room, slowly and carefully, not moving his eyes or his head too abruptly, but most of the engineering details were obscured by either medical equipment or finishing details. It was interesting to see those details but what he really wanted was to see how the place was put together.

"I know what you mean," said Stanton. "I remember how impatient I was when I woke up." He laughed at the memory. "Once the vertigo settled down to a tolerable level, I just wanted to get going. To do what I came here for."

"Exactly," said Elgin, beginning to nod before he caught himself. But something confused him. "When did you first wake up? Which cohort are you in?" He was wondering how Stanton could be planning to work with him when he must be about due to go back into hibernation himself.

"Well," said Stanton, "it's not that clearly defined anymore." He did a complete scan of the instruments reporting Elgin's condition. Satisfied, he nodded and told the machine to lower the level of Equilibrium slightly. "It didn't take long to figure out that we couldn't just swap everybody in and out every twenty years. We needed to maintain some kind of continuity, so the planners set up a system to stagger things a bit." Elgin's knuckles didn't get any whiter from clutching the bed, so he left the dose at the new setting. "I'm technically in the third cohort, but I started late. And I didn't want to miss out on this joining project so I requested an extension, which was granted."

Elgin was impressed by that. His new boss must have a lot of pull or he must be a very good engineer. He felt oddly proud, as if he belonged to something special. It was nice to join a team that played in such a league, to work with a leader of such stature. There must be plenty of engineers coming up for their turn at waking and they would have to wait until after the joining, the most interesting engineering problem ever, because the planners chose to keep Stanton in charge. He looked at his minder, his face showing profound admiration, approaching awe.

Stanton caught the look. "Uh-oh," he said. "I think it's time to reduce the oxytocin."

Gradually Elgin returned to normal, and found himself embarrassed by his display.

"Don't worry about it," said Stanton. "The oxytocin really helps people feel good about their situation, which improves their recovery." He winked at Elgin. "I won't take it seriously if you don't."

Elgin was blessed with good sense. He was able to laugh at himself. "It's a deal," he said, and

they shared a good laugh. Not too good, though, since he wasn't sure what might happen if he laughed too hard.

True to Stanton's word, by the end of the day he was off the Equilibrium altogether. He felt much more comfortable in his body, and he even managed to make his hands let go of the bed. Now the only thing holding him down on it was the forest of tiny cilia in the sheet that hung onto him the way a gecko's foot hangs onto a wall. That simple invention made sleeping in microgravity much more natural. They didn't have to sleep in a bag or strap themselves onto the bed. The gecko sheets clung enough to hold them down but not so much that it was hard to roll over.

Now that his sense of balance was calmer he was able to take stock of the rest of his senses, and he found them to be functioning normally. At least they were normal enough that he couldn't see anything too far out of whack. The orientation had also said that the senses would recover in the first few days, but that some fine tuning might go on for a few weeks after that.

The only thing missing was synesthesia. He knew it would come last, after everything else was in place. Since it was a meta-sense or an epi-sense, it needed the others to be functioning before it could work properly. Already he was noticing little things as it began to get organized, but he knew that the full effect, the whole "common sense" of synesthesia would take another day or two to rebuild.

Chapter Seventeen – Elgin Eats And Goes Out

On day four, as promised, Elgin was able to get out of bed. He woke up feeling better. He had clarity in his senses and in his thinking, sharp enough that he could now see how dull they were the day before. He hadn't felt especially dim yesterday. Maybe a bit tired or confused, but close to normal he would have thought. But the new level of acuity today made him realize he thought wrongly. It also made him wonder if he was overestimating himself today, too.

Stanton came in as soon as Elgin woke up, and an amazing aroma wafted in with him. The coffee struck him first, but bacon was there the next instant. He detected some kind of baking item, muffins maybe, and rounding it all out was a mysterious smell that was new to him, but seemed so familiar that it made him feel nostalgic. He was struck speechless by the power of the combined aroma, but his stomach spoke for him. It growled so loudly that Stanton heard it clearly across the room.

"Well," he said, "it sounds like that's working." They were both grinning broadly. Elgin was up on his feet before he knew it. He didn't remember getting out of bed, and now he was moving toward the door, toward the source of those enticing vapors. He felt like a passenger in his own body. It was as if his stomach, still growling with anticipation, had taken over. He relaxed and enjoyed the ride.

Stanton turned and went out ahead of him, and Elgin got his first good look at his wings. Folded over his back, their tips came to just past his buttocks. They were covered with fur, like the rest of his body, only it was a little darker. Now that he looked at it, Elgin could see that there was variation in the fur color everywhere. It was subtle, just enough to break up the monotony, but it made for a nice effect.

The only parts of Stanton's body that weren't furry were the face around his eyes, the palms of his hands and the soles of his feet. Elgin could just glimpse his soles as he picked up his feet while walking.

Entering the anteroom was like plunging into a pool of bright light and delightful smells. Elgin's eyes closed automatically and his nose flared, drawing in a large percentage of the air in the room. Water burst into his mouth and he opened his eyes and walked over to the table, swallowing. The next few minutes were lost in the ecstasy of eating, punctuated by moans and sighs and other prandial sounds. The bacon was excellent. It was crisp and just like the real thing, as far as he remembered. The coffee was perfect – dark and a little bitter. You had to know it was algae or you couldn't tell. The muffins, soft and warm with faux butter, were the vehicle of Elgin's introduction to iceberries. He would love them for the rest of his life.

Once the sensual rush was over, Elgin's brain kicked back in. He and Stanton had walked over to the table. Walked? In microgravity? Thinking back on it, he recognized the incongruity. Now that his gut was no longer in charge, he remembered that the walk was really a parody of walking. Something like a marionette, only with sticky feet. Each foot would hold him down on the floor while he moved the other forward, then peel off with a slight resistance when he picked it up. He flipped a foot up onto the other knee and peered at the sole. Other than being thicker and tougher and drier than he was used to, he couldn't see anything that would make them especially grippy.

"Setae," said Stanton, leaning back, sipping coffee.

"Setae? Like on the sheets?"

"Yes. And these chairs."

Elgin looked down and realized he'd been sitting comfortably on a chair without wondering how. He experimentally peeled and restuck his buttocks a few times. Then he did the same with his

feet on the ice floor. “Nice,” he said.

“Yes,” said Stanton. “It was the second cohort that came up with it. It came down to heat retention.” He held up a hand, its palm facing Elgin. “They realized that both the thin skin and the moisture here were causing too much heat loss, so they wanted to both thicken and dry the palms and soles.”

“But we need those for grip and traction.”

“Right. Exactly what they thought. So they needed something that would replicate that, even on ice.”

“So setae. Brilliant and elegant.”

“Right. We used to call them our gecko feet, but that's faded and we don't even think about it usually. Except when someone like you is experiencing it for the first time.”

Elgin experimented some more and made an odd discovery. “It feels new to me, but it doesn't feel . . . unusual or unnatural.”

“That's right. And you didn't really notice when you were walking for the first time either, did you?”

“No, but I put that down to being madly ravenous, and maybe there were still some drugs in my system.”

Stanton nodded. “Both true, but without the brain conditioning you would still have reacted. And you wouldn't have walked quite so naturally, since you've never done it before.”

It was Elgin's turn to nod. Everything about it was logical. But there was still a problem. “But altering the body and changing the brain. Those should only be done with each person's consent.” He frowned, sorting it out. “The second cohort decided for the third, and the third for the fourth. How did they get around that?”

“Yes, that was a problem. They knew it was a good modification. They knew people would be glad it was done, even if they weren't asked. And they knew it was relatively minor. It doesn't really change the appearance and it doesn't really affect a person's self image. So they snuck it in on a technicality.”

“A technicality?” Elgin raised his eyebrows.

“Yes. The waiver everyone signed for the modifications they would agree to undergo – fur and cryptic genitalia, for example – used language that didn't limit it to just the examples. It seemed to allow for other procedures that would serve the same end.”

“A technicality.” Elgin's smile could be called a smirk.

“Yes,” said Stanton, smiling back. “A good old technicality.”

Elgin experimented with a coffee cup, seeing how well it stuck to his palm and fingers. “Good choice, I think.”

“I thought so, too. It does fit the criteria and its benefits far outweigh the minor nature of the change.”

They sat silently for awhile, picking and nibbling at the remains of breakfast. Elgin was studying the room, whose construction was more exposed than in the bedroom, when he noticed a full length mirror.

He was staring at it, so Stanton followed his gaze. “Oh, yes,” he said, “the mirror.” He rose. “I'll bet you want to have a look at yourself.” Elgin got up and crossed the room with him to stand in front of the mirror.

The first glance took in everything. His whole body was covered with thick fur, brown with reddish highlights like his original hair. It was sleek, like an otter, and looked smooth and shiny. “I have a glossy coat,” he told Stanton, “I must be healthy.”

“As long as you don't have a wet nose,” said his minder.

Elgin's eyes flicked back to his face. His nose wasn't wet. It was the same nose he had before. It, along with his cheekbones and most of his forehead, framed his eyes with bare, almost hairless skin, although he still had his eyebrows. He waggled them, eliciting a laugh from Stanton. Looking at his face, even though most of it was obscured now, he realized it was still recognizable as him. His eyes, a rich medium brown that seemed to glow, were almost the same. The pupils were a bit bigger than before and, looking close, he thought he could see a glimmer from their tapetums, but the eyes were still his. And his mouth, with the lips that were not quite thin and not quite symmetrical, hadn't changed at all.

He glanced at Stanton standing behind him, comparing their two images. The other man was well built, to the point of burliness. He was about a half-head shorter with darker brown, almost black fur, which could only partially conceal a slight thickening in the torso. Elgin's gaze swept on down the stout legs to the large feet planted squarely on the floor, then back up to where the legs joined at the top. His natural inclination to not look at another man's genitals too closely was overcome by the realization that there was nothing there to look at. A spike of revulsion was followed by a flash of fear as his eyes snapped back to his own groin, which was similarly blank. At the same time his memory was trying to tell him that he was expecting this, but it's one thing to hear about cryptic genitalia and quite another to not see your own where they ought to be.

"That's a bit of a shocker, isn't it?" said Stanton.

"No kidding," Elgin replied, his heart still fluttering. He stared for a moment longer, then disengaged, telling himself that he could finish later in private. Right now he could see what must be the points of his folded wings just peeking over his shoulders, so he turned to get a look at them.

Like Stanton's, Elgin's wings were a shade darker than his overall color. Folded, they were quite flat to the back, lying in contact with it rather than standing off. They didn't overlap, except at the tips. From the points at the top they converged until they met between the shoulder blades, then they ran straight down to the tail bone. At that point the left tip, if he had that right, it being backwards in the mirror, emerged and crossed over top of the right one.

They were completely covered by fur, but it was shorter than the body fur next to it, and not as thick. He guessed that was a design decision, probably to keep the weight down. They wouldn't be that heavy anyway, and easy to carry around in microgravity, but you wouldn't want any unnecessary inertia to overcome when flapping them. Thinking of which, Elgin became curious about their operation.

To his surprise, as soon as he thought of opening them, his wings opened. He looked the question at Stanton, who nodded. Apparently more brain conditioning, like the walking. Smiling, he stretched his wings all the way out, noting that the leading edge had a noticeable bend at the joint. The tips reached farther than his outstretched hands, and could be brought around to meet well above his head. He noticed that the fur on the undersides was even shorter and thinner. He could almost see skin in some places.

He gave a couple of experimental flaps and was surprised when his feet separated from the floor. He was heading for the ceiling, struggling with all six limbs, when Stanton caught him and deftly returned him to the floor.

"Well, that surprised me," said Elgin.

"They're more powerful than they look, aren't they?"

"Yes. And the setae obviously aren't as strong as gravity."

"Gravity's the key. We don't have to create any lift here, so it can all go into maneuvering."

"Which raises a question. Why couldn't I maneuver? Why wasn't I able to catch myself and get back down?"

"Brain conditioning can only do so much. You need actual experience to get any good at it."

"That makes sense. I felt like a newborn calf trying to get to its feet."

"You looked more like a fledgling stork falling out of its nest."

"Hey!" But the image was so apropos, and so funny, that he had to laugh.

"You'll have it in no time," said Stanton. He waved off Elgin's doubting look. "I can tell by looking at you that you're naturally athletic. You move like one. I don't know how to describe it. Like a dancer or something."

"I'm certainly no dancer. My aunt tried to teach me, but she gave up. She said, 'It's such a waste, you so graceful and so good looking.'" Elgin rolled his eyes at the memory. "She said, 'Why can't you relax and let go? You could be such a good dancer, but you don't even try.'"

"Why didn't you try?"

"I did try!"

"Not hard enough for her, apparently."

"I tried hard. I learned all the steps and all the moves. I could do whatever dance she wanted and never step on her feet. Her complaint was that I wasn't 'expressive' enough. 'You dance like you're building one of your projects,' she said. 'You do all the right steps, but there's no life in it.'"

"She sounds like an interesting woman."

"She was. She is. She was in the theater before she married my uncle."

"Ah," said Stanton.

"What?" said Elgin.

"Never mind. Why couldn't you be expressive?"

"I tried to, but it didn't feel right." Elgin looked a little embarrassed. "It felt like showing off."

"But dancing is partly showing off," exclaimed Stanton.

"I know, and I just can't do it."

"Isn't that ironic," said Stanton, "if ironic is the word. I'm never sure."

"What?"

"Well, I love dancing but I'm lousy at it. You're good at it but you won't do it. Is that ironic?"

"Sort of. It could be." Elgin shrugged. "I don't really know."

"Yeah, me neither," said Stanton. "So, are you done admiring yourself in the mirror?"

"I guess that's enough," Elgin said, striking a pose and giving himself a good last look. "For now. Why?"

"How do you feel about going out?"

"Going out? Where?"

"Not too far. I thought we could fly around a bit. Get you some exercise."

"That sounds good to me. I feel like I could use it. I've been lying around doing nothing for ages."

Stanton chuckled and led the way to the door. "I'll clean up later," he said as they passed the table.

In a relatively confined space like the anteroom, it was more natural to keep the wings folded and walk, or at most kick and glide. When they went through the door, though, they entered a wide open space. Stanton's wings automatically opened part way and began moving, correcting and maintaining his position and attitude. Elgin's wings also opened slightly, but not for the same reason. His arms came out too, and his feet spread and gripped the doorstep for balance. He froze in that position, staring across the corridor at the opposite wall. He was trying to quell a small rush of vertigo.

"Take your time," said Stanton. "We've got all day."

"It's alright. It's passing already."

"That's good. And about normal. It should be gone completely by the time we get back today."

Elgin was able to move his gaze, and he was rewarded by the impressive size of the corridor. Making sure to not move his eyes or turn his head too quickly, he took in its dimensions. It was at least ten meters to the ceiling and over fifteen to the far wall. He opened his senses and felt the shape, smiling with satisfaction when his innate sense of proportion told him that it was actually a bit over sixteen meters, making the cross section of the corridor fit the golden ratio.

Stanton was following Elgin's thoughts as they showed in his face, and he nodded with a tight smile. Here was evidence that his new employee really did have a natural eye for the work. That told him as much as all the files he'd read. Elgin was shuffling now, looking as if he wanted to get going, so Stanton said, "I think you should just push off with your legs, then we can get you stabilized once we're going."

Elgin was surprised by how quickly he caught on. Most of the flight was spent gliding, using partially opened wings to steer, with the occasional flap to keep the speed up. It wasn't long before he began experimenting. He made slow, sweeping turns back and forth, and long undulating waves up and down. He opened his wings, grabbing lots of air to slow down, then gave a couple of sharp thrusts to get back up to speed. It wasn't perfect of course. A few times he ended up tumbling out of control and Stanton needed to intervene to stabilize him. And the one time he tried a roll, by the time he was on his back he was disoriented and flung out his wings to stop it.

Stanton tried to explain while he helped him right himself. "No one's quite sure, but the consensus is that our sense of up and down is pretty strongly ingrained from evolving in gravity, and even though we only have visual cues for that here, we still have the instinct for it."

"Okay."

"So, even though it shouldn't make any difference which way you're oriented, you still think one way is up and the other is down."

"That is definitely true."

"Until you get used to it, your brain won't process what you see as efficiently when you're upside down, so things won't look right."

"Yeah. That's what happened. I couldn't tell where I was any more."

"Exactly. You'll get used to it, though. All it takes is a bit of time. Surprisingly little time, when you think about it."

"Okay." Elgin gave a few flaps and set off again. Right side up. Stanton effortlessly matched his pace.

After another few hundred meters, Stanton gestured ahead and said, "We'll take the right fork up there."

"Okay," said Elgin. "Are we going somewhere in particular?"

"Yes. There's something I want to show you."

"Oh, yeah? What?"

"You'll see."

"Secret, eh?"

"I want you to get the full effect of it when you first see it. I don't want to spoil it by talking about it too much."

"Oh," said Elgin, more curious than ever. "Is it something you built? Some engineering feat?"

"You'll see." He led Elgin around the corner and slowed down. They both drifted to a near stop while Elgin tried to take in what he was seeing. At first he couldn't grasp the scale of it. He could see that it appeared to be a sphere made of ice, and he could tell that it was big, but for a few seconds he was not able to see how big. Finally the cues began to register. He could roughly estimate the size of the chamber containing the sphere by comparing it to the size of their corridor, and he could see the mouth of another corridor in one of the chamber's walls. "Is that thing a hundred meters across?"

"Yes it is," said Stanton, sounding pleased.

Elgin could see right through it and out the other side, so the ice was remarkably clear, but by the nature of the refraction he could tell that it wasn't solid. "You built a big hollow sphere of ice? Why?"

"It wasn't just me," insisted Stanton. "There were a few of us working on it."

"But it was your idea, right? And most of the engineering was your work?"

"Well, yes." Stanton was getting uncomfortable. "But that's not why I brought you here." He moved toward the sphere. "Let me take you inside." Elgin caught up and they cruised partway around the outside until they came to the entrance. Stanton stopped and bowed Elgin in, following close behind.

It was even more impressive inside. Looking straight across, you couldn't see the far wall. The ice was too clear and the angle of incidence too close to ninety degrees. Once your line of sight moved off the perpendicular though, there was a steady progression of increasingly distorted images, until they disappeared and were replaced by reflections.

"Stay here," Stanton said as he headed across. "No. Right up against the wall. Good. Don't move." He turned and flew quickly to the opposite side, where he put his head close to that wall. Elgin heard something that sounded like whispering. "Elgin," it said, "can you hear me?"

Elgin looked around but he couldn't tell where it was coming from, although it sounded as if it was right there beside him. "Stanton?" he said.

"Yes. Can you understand me?"

"Yes. Can you hear me too?"

"Whisper instead. It works better."

"Okay. Like this?"

"That's it. So, what do you think?"

"It's fantastic. You've built the largest ice whispering gallery ever made. I'll bet people have a lot of fun here."

"They do. Meet me in the middle." He pushed away from his wall and Elgin followed suit. He was waiting at the center when the younger man arrived. "Okay," he said, "tell me what you think."

"Like I said, it's fantastic."

"No. As an engineer."

"Oh." Elgin felt trapped. He looked everywhere except into the senior engineer's eyes.

"Don't worry, Elgin. I know where the flaws are. You're not going to hurt my feelings." Stanton put a hand on his shoulder. "I need to know how good your special talent is, what you can see in something I'm intimately familiar with." He patted the shoulder. "This is a test, Elgin."

"Okay," said Elgin. He didn't have to take any time to look at it. Anything he might have missed when he first saw it, he picked up when they entered. "There's only one thing. The entrance."

"Only one?"

"Right."

"Are you sure?"

Elgin looked at him. "It's not a question of being sure or not. Once I know, I just know." He shrugged. "I'm sorry."

Stanton nodded and clapped the shoulder. He was smiling. "Don't be sorry. Tell me what's wrong with the entrance."

"It's not very, uh, mathematical. I mean, I could do the math if I had to, but it hits me more physically at first."

"Just give it to me however it is. We can do the math later."

"Okay." Elgin brought his hands up and used them to indicate the roundness of the sphere.

"The walls flow smoothly. Their lines are all even, very well arranged. But there's a kink at the entrance. There's a knot in the lines there."

"A knot?"

"Yes. The stress lines are very smooth and symmetrical everywhere else, but at the entrance the flow is disrupted."

"The flow," Stanton mused. "You know, I've always known there was something wrong with the entrance."

"It's nothing serious. It's structurally fine."

"I know. I wouldn't let people use it otherwise. But that entrance has always bothered me, and now I know why. It doesn't flow." He grinned at Elgin.

"It's not a problem. People can still use it."

"Yes, they can. But it will niggle at me." He frowned at the offending portal. "We've got to fix it," he said, looking at his young companion. "What would you recommend?"

Elgin frowned at it, turned and looked at the opposite wall. "It's not attached to anything, is it?"

"No. Floating free. Kept from wandering by jets of air."

"It's a nice effect."

"That was the idea, to emphasize the 'ballness' of it."

"I'm sorry," said Elgin, "but I think it can only be fixed by anchoring it."

Stanton nodded. "I kind of thought that. It's too bad, but it's probably for the best. It's pretty high maintenance the way it is now." He pointed by tipping his head, and Elgin noticed that the wing top on the same side joined in the motion. He found that fascinating, but his boss was talking. "We might as well anchor it right there and incorporate the doorway into it, eh?"

"Yes, but," Elgin tipped his head at the other wall, and he tried moving his wing too, "we should replicate it over there. That way the lines can flow more symmetrically."

"Well, the lines must flow."

"Yes, and it's probably prudent to have a second exit, too."

"That's a good point." Stanton clapped his hands. "But tomorrow is soon enough for that. Right now I want to show you why I really brought you here."

"You had an even more ulterior motive?"

"Yes, Elgin, I brought you here to exercise," he said, sweeping his arm at the abundance of space. "There's plenty of room for all the mistakes you want to make in here."

"I can see that." Elgin spread his wings and used them to rotate, taking it in. "Are there any particular exercises I should be doing?"

"Not at all. Just fly around. Try things out."

And that's what he did. A few powerful thrusts propelled him toward the far wall and he was able to turn before running into it, although awkwardly. He skimmed around the inside of the curve, fine tuning his directional controls, until he came to the opening. There he turned as hard as he could to head back to the center, where Stanton still waited, watching him. With some strong backthrusts, he came to a stop in front of his friend, with only a little adjustment necessary to find the correct position. "That can use some work," he said.

"Not much, though," said Stanton. "I told you you're a natural, and I was right."

"Like a dancer," laughed Elgin, flapping away to enjoy some more of this experience. He tried everything he could think of. He saw how fast he could go. How quickly he could stop. How tight a turn could be. He tried the air in every quadrant of the sphere. At one point he cruised by Stanton on his back, ankles crossed, hands clasped behind his head. That earned him a grin and a smack with a wing.

It was after he executed his third Immelmann turn, doing it just about as well as he could

without the help of gravity, that he began to feel the effects of all the strenuous activity. He was getting tired and sore in muscles he didn't recall ever noticing before. He pulled up to Stanton, puffing a little.

"I was wondering how long you could keep it up."

"That feels very strange. I'm tired where I've never been tired before." He gently rotated his wings joints, wincing slightly.

"If it makes you feel any better, I've never seen anyone do so much or do it so well the first time."

"Yeah, I'm a natural." Elgin looked around. "This is a great place you built, Stanton. It's just the sort of thing someone like me needs. Did you build it just for wakers?"

"No, it was built for something else. This is just a beneficial side effect."

"Something else? What?"

"It's an arena for a game we play. It's a team sport and we have leagues and all, but everybody plays it sometime in their life, even it it's just packs of kids in the corridors."

"It sounds interesting. What's it called?"

"It's called flashball. There's a game this evening, if you're interested."

"Sure, I'd love to."

"Right, then, it's a date. But now, let's get back. I want to check you out. Let's see how you held up to this."

"I'm fine. I just got tuckered out, that's all." He shook his head vigorously, and smiled. "And you were right. The vertigo's gone."

"Good. But we have to check you out anyway. I plan on putting you to work tomorrow, and I want to be sure you're up to it."

"Work! I can hardly wait. But tell me more about this flashball." They headed back engrossed in talk, Stanton illustrating it with broad arm gestures.

Chapter Eighteen – Elgin Goes To Work

True to his word, Stanton came the next day and took him to work. Elgin was up early, not having slept very well. In addition to some soreness, his anticipation and excitement kept waking him up throughout the night, and he finally got out of bed and went hunting for food. He found some leftover muffins and iceberry jam, and figured out how to make coffee. The last time he made coffee it was real, made from actual coffee beans, and there was gravity. This coffee maker worked on a different principle, not having gravity to do any of the work, but he got it. The only thing was, he didn't know how much to measure out and ended up making it too strong.

Stanton arrived as he was having his second cup, and when he tasted the coffee he said, "Whoa."

"I know," said Elgin. "I didn't know how much to put in."

"Never mind. I've never had a cup of coffee that was too strong."

"Me neither. I actually like it like this." Elgin sipped and then qualified that. "Maybe a little less strong for everyday use."

"Same here," said Stanton. "I only have two or three cups a day, but I like them to be worth it."

"I normally have four or five cups, unless I'm engrossed in work. Then I could drink a lot more and not know it."

"I know what you mean. If there's a cup by my hand I'll drink it." Stanton emptied his cup and took it over to rinse out. He held out his hand and Elgin tossed his cup over. He threw it high, naturally expecting it to travel in an arc. Stanton was accustomed to microgravity and plucked it out of its straight trajectory. Then he surprised Elgin by tossing it back. He missed it, holding his hands too low, and it hit him in the chest. "That's something you're going to have to get used to, especially if you're going to play flashball."

"You would think I would have caught on after last night," Elgin said. "I must have seen hundreds of passes and they all flew straight, other than the ones with spin on them."

"It's something else that needs experience. Catching and throwing are done automatically. You need to retrain your reflexes."

Elgin tossed the cup back, right on target. "It's easy if you're thinking about it."

"And soon enough you'll be doing it without thinking about it." Stanton rinsed the cups and put them away. "We all do it and we were all like you."

"Of course."

"In a funny way this might be easier than learning in gravity," said Stanton. "There's one less variable to think about."

"Yeah, you're right," said Elgin. After a moment's silence he said, "Well, weren't you going to put me to work today?"

"I was. We should get going if you're ready."

"Ready and raring, boss."

This time when they went out the door, Elgin's wings automatically opened partway in preparation for flight, rather than in response to vertigo. He let his feet leave the doorstep and he hovered, waiting for Stanton to lead the way.

"Same way as last time," said Stanton, "only we'll take the left fork this time." He took off and set course, tracking a few meters off the right wall and about the same up from the floor. Elgin fell in alongside. "You're flying well this morning," he said.

"Thanks. I'm hardly sore at all, and it feels much more natural."

"It is. I think it's even better than it was at the end of yesterday's practice."

"Maybe there's something to that old saying about sleeping on it."

"There could be you know. I've heard that learning works better if you have a good sleep afterward."

"It seems to have worked for me, although I wouldn't say I had a good sleep."

"Oh? Too much excitement yesterday? Or maybe it was too much flying. How are your muscles?"

"A bit stiff, thank you, but it wasn't the pain. And it wasn't the excitement of my big day, even though that flashball game was pretty good."

"It's an interesting game, isn't it? Last night's match wasn't bad but you'll see better."

"It took me awhile to get what they were up to, especially since there were no goals, no obvious way to score points. But I got so I could see what they were trying to do." Elgin chuckled. "I have no idea about the rules, though. When the referees blew their whistles I just had to shrug and move on."

"Most of the rules are pretty obvious once you figure them out." Stanton looked at him. "So, what disturbed your sleep then?"

"Anticipation. It's always been this way when I've started something new. The night before my first day I'm lucky to get three hours sleep, in half hour chunks."

"I know what you mean."

They flew on for awhile, thinking and taking in their surroundings. There were quite a few people in the corridor this morning, most going in their direction and just a few in the other. Elgin smiled and nodded at yet another one and realized that most of them seemed to be greeting him. They weren't doing it so much with each other as far as he could see, just with him.

"Stanton," he said, "why are all these people looking at me? Have I got a sign on my back or something?"

Stanton laughed. "No. They can just tell that you're a new waker. They're welcoming you."

"How can they tell? Do I look different?"

"They can tell by the way you fly."

"Is it that bad?"

"No, but it's obviously not completely natural yet. You're still very deliberate about it." Stanton thought about it. "They can see that you still have to pay close attention, and that you have to consciously do your adjustments and corrections."

Elgin took a moment to observe the passersby, nodding and smiling at those who greeted him. He compared their flying to his. "I see it," he said. "You're right. They're flying without even thinking about it, and I'm still overcorrecting almost every time I do something."

"I wouldn't say it's that bad," Stanton reassured him. Then he pointed ahead at someone coming the other way. "Look at that guy." The man was moving at a moderate clip, but what surprised Elgin was that he was reading something, paying no apparent attention to his surroundings. He was making continual adjustments to his course and attitude with small movements of his nearly closed wings, all without needing to look where he was going. They watched him go by without even glancing at them, completely engrossed in what he was reading.

Stanton said, "It's all second nature to him now. He can do other things while he lets his cerebellum do the flying."

"But why doesn't he run into people? How can he tell where he's going?"

"He doesn't have to. All he needs to do is maintain a stable flight path, which he can do instinctively, and take in enough peripheral information to stay in his lane."

"There are lanes?" Elgin asked, looking for markers.

“Not officially. It's just a kind of common understanding that we all agree on.” Stanton pointed out the obvious. “People going this way are on this side, and vice versa.”

“Oh, right. I saw that but never thought about it.”

“What's not so obvious is how we set ourselves up a certain distance from the wall and the floor.”

“I wondered how you decided that. I thought it was probably just habit. It didn't occur to me that there might be more to it.”

“And then we separate ourselves by speed.” Stanton used his hand to indicate different levels. “Our lane is for regular travel at a moderate speed. Most people fly at this level.” He pointed up. “If you want to travel faster, or you just need to pass someone, you take the upper level. It's logical for the person doing the passing to have the best view.” He nodded toward the floor. “People who want to go slowly go down there.”

“And that guy could tell if he was in the right place with his peripheral vision.”

“Not just his vision. Your ears can tell how close to the wall you are by the way the sounds are echoing, too.” Stanton fluffed up the fur on one arm. “And this is good for more than just keeping us warm.”

“We can sense things with our fur?”

“Yes. An unforeseen secondary benefit.” Stanton tried to describe it with his hands. “The air,” he said, “acts differently up against the wall than it does when it's more free. With fur, our skin can feel the difference.”

“That's amazing,” said Elgin.

“It certainly is. So, once you get your cerebellum trained and you tune into your peripheral senses, you'll be able to fly on automatic pilot, just like that guy.”

“That hardly seems credible right now, but I'll take your word for it.”

“You'll be playing flashball before long, I have no doubt.” He gestured ahead. “We go left here.”

It was a 'tee' intersection and the left fork was almost identical to the one they took twice the day before. It went on in unremarkable similarity for awhile before Elgin started to notice things. The sounds changed, as did a vague sense of pressure differential. He asked Stanton, “Is there an opening up ahead?”

“You might say that.”

Just then it became visible far ahead. In addition to more subtle effects of sound and air pressure, the light was also brighter. It felt more active and busier. They emerged from the corridor into a vast space. There were people, maybe hundreds, everywhere and going in all directions. Elgin looked at his friend, grinning with the infectious excitement of the place. Then without realizing it he came to a complete stop, and Stanton had to pull him out of the flow of traffic. He looked his apology at them and the people just smiled and nodded. They knew what was going on.

He parked his friend in a safe place and stood by to wait. It looked as if Elgin was having what the psychologists called a synesthetic storm. There was so much going on, so much stimulus to all his senses at once, that all of the associated synesthetic responses were activated at the same time. They were reinforcing each other in a kind of positive interference, producing a perfect wave of perceptions. It could happen to anyone in the right circumstances, and most people experienced it at least once. It was a benign effect that rarely had any dangerous side effects. For Elgin this was the perfect time and place for it to happen.

What he was seeing was not the light that was impinging on his eyes, and it was the same for his hearing and all his other senses. He was tasting the light and seeing the smells, while at the same time he could smell the breeze of people passing in the fur on his arm. But each of those sensations

and episensations triggered another response, which led to another. The result was a very bright, very noisy, very everything else amalgam that was just short of painful. His brain wasn't able to present it to him as a comprehensible whole, so for now it just passed on everything as it was happening.

Gradually things began to come out of the storm. Flowing colors became people moving. A sense of a large, solid rock at his side resolved into Stanton. It got quieter and he was able to discern individual voices calling to each other. Finally the scene fell back together for him.

"Wow," he said. "Was that normal and expected too?"

"Normal in a sense, but not necessarily expected." Stanton's voice solidified reality.

"So you didn't know this was going to happen?"

"It was a possibility, but that's all."

Elgin thought about that while taking a good look at the huge chamber they were in. He found it impressive. He was pleased to see that both sides of the space, as well as the floor and ceiling were built to the golden ratio. The long dimension looked to be about a hundred meters, with the height and width being just over sixty. That made the end walls squares.

What caught his eye now were the decorations. There were pillars, and halfway up the wall were friezes carved in bas-relief. He could make out some of the carvings and they seemed to depict events of significance from back home. Certain things from the history of their planet that were important to their lives here were engraved there. His eyes stopped at one on the far end wall, and he felt a tug when he recognized the destruction of Yellow Comet. It saddened him, but somehow it made him feel good, too.

He began to notice the use of color. Unlike the corridor where most of the colors were reflections of the people in it, or were created by glimmers from the lighting, the builders had incorporated colors by design here. They were displayed prominently in the friezes, the colors illuminating their scenes and characters with striking effect.

The other major use was in the columns that stood out from the walls, designed to look as if they were providing support. Elgin knew from his studies that they weren't. They were here strictly for show, as decoration, and it was done very effectively. The entrances, three on each long wall and one on each short wall, were framed by massive columns. Each wall had a different color, rich primary hues representing the four synesthesia comets.

Directly opposite them, on the other small wall, was rich, bright yellow, looking like the rising Sun at a distant horizon. The long wall on his left was orange. The one on his right, where most of the activity seemed to be focused, had carvings and columns that glowed as if they were made out of huge, perfect emeralds. Elgin spun around and looked at the ruby pillars that framed the entrance they had just passed through. They were so beautiful that he could taste them. The sensation swept over his body, raising a wave of fur in its wake.

He flew close to one of them and looked deep into it. The color went right through it. The ice was flawless transparent red. Moving around the side he could see people coming and going in the entrance, their images warped by refraction and tinged deep red, but otherwise clear. He reached out and touched the ice, and its smooth coldness just multiplied its beauty.

Elgin turned to Stanton, who was quietly waiting. "This place is amazing," he said.

"Yes." said his friend. "You get used to it with time, but you never get really used to it, if you know what I mean."

"I think I do." Elgin took it all in, and found that it was just as powerful in the whole as in its parts. "What is this place, anyway?"

"We call it the Square." He held up his hand to forestall any objection Elgin might have. "I know it's not square. But we couldn't really call it the Oblong, could we?"

Elgin's first inclination was to object to the imprecise use of language. His engineer's mind

didn't like it. A square and a rectangle were two distinct geometries. You might as well call a rhomboid a trapezoid. But still he approved of the name. It hearkened back to a time when village life centered around a square, where people came to get the news and do business. Green Comet was a village, really, and the Square was just what it needed.

He looked at the bustling activity. People were transiting the open space, heading for exits or the fronts of what must be places of work and business. Many of the - he didn't know what to call them so he thought of them as shops - had clusters of people at their fronts. Some appeared to be engaged in earnest conversations, but most looked relaxed and happy, just enjoying the pleasures of company and gossip. Most of the activity was taking place within a few meters of the floor, with only a few people flying higher to get around a crowd or, as he saw once, to get down from an opening high on the wall.

"There's so much I want to ask you," he told Stanton.

"And I'll tell all. But right now we might as well get to the shop."

"That's one of the things!" Elgin said, falling in. They were headed to the right. "Is that what these places are called?"

"That's one word. We call our place a shop as in a workshop. Other places called shops are where people shop. They can also be called stores. Then there are offices, which we could also call our place if we wanted. Restaurants and theaters. Some of these entrances are for apartments. See those balconies?"

Elgin looked up. The balconies were like the place he'd seen the person coming down from. "It looks like everything happens here."

"Pretty well. This is where everyone wants to be. Where everyone wants to work." Stanton qualified it. "As a first approximation, anyway." He responded to Elgin's questioning expression. "Effay, everyone wants to be here, but there are always times when people want to do things quietly, away from the eyes of their friends and neighbors."

Elgin nodded. He could understand that need, but, "Effay?"

"Oh, right," said Stanton. "That's a figure of speech that came into the language here. It's short for 'first approximation.' I guess we found ourselves using that phrase a lot so we came up with an abbreviation."

They were approaching the green side. Stanton appeared to be heading for the furthest of the three entrances. When they got there he stopped so Elgin could admire the emerald column as he had the ruby one. Even though everything was green instead of red, and it evoked different feelings and flavors, he still found the sensation powerful and profound.

They carried on through and up the corridor about twenty meters, until they came to a doorway on the right. Stanton showed him in and they entered the shop together.

It was large and brightly lit. Like all the living spaces in the comet it had a high ceiling, over five meters. The room was square, about ten meters on each side. It was furnished, or littered if you were being honest, with utilitarian neglect. There were some cabinets and chairs and tables, but they had an air of being pushed aside and forgotten. There were only two areas that looked as if they saw regular use. One had a cooler, some cupboards, a sink and a coffee maker. The other dominated the center of the room. It was obviously their work table, and it appeared to be covered with work in progress. One of the high stools next to it was occupied by a lanky, bony man who looked like a bird perched there.

"Buzzard," Stanton called.

The man didn't respond, so Elgin asked, "Buzzard?"

Stanton chuckled. "His comet name is Bussard. And look at him."

Elgin could see what he meant. With his long body and perched as he was, leaning over his work, he did bring a vulture to mind.

"Buzzard!" Stanton called more sharply.

The figure at the table started, straightening up and turning wide eyes on them. Elgin could tell that he saw them but it was obvious that he was barely registering it.

"Got something you need to finish there?" asked Stanton.

Bussard nodded, his eyes sliding back toward the table.

"Right, you finish up then. I'll introduce you later."

He swung back to his work, and Elgin thought that he probably forgot they were there almost right away. He asked Stanton, "Is that what I'll be doing?"

"Yes and no. You'll be working with Buzzard. Technically he'll be your boss," he added.

"You'll take direction from him, but we really all work together as a team." He indicated the whole shop. "We all do whatever needs to be done, but each to their own talents. Buzzard has the most incredible talent for detail I've ever seen, for instance."

"He can certainly focus," Elgin said.

"Yes. Sometimes I think he kills bugs by staring them to death." Elgin could see a trace of a fond smile as Stanton was looking at Bussard. "As for you, my young friend, whatever you can bring remains to be seen. I have high hopes for you but we'll see what happens when you start dealing with real problems."

He took his new employee on a tour of the shop. He showed him a cabinet he could use for any personal things he might want to leave at work. There was a bathroom with a shower for those inevitable marathon projects. At the galley he said, "Don't use Buzzard's things," pointing them out by the sink and in the cooler. He gave Elgin a look and there was no need to explain. Finally they came to a door. "This is my office," he said. "If the door is open you can come in any time, but if it's closed," he emphasized, "then stay away from it unless the comet's on fire."

"Gotcha," said Elgin. "If you don't mind my asking," he ventured, "what's your talent?"

"I'm in charge," said Stanton. "I make all the big decisions and I take all the credit." He winked, softening it, but Elgin could tell there was a sardonic truth to it.

They heard signs of life over by the table and turned to see that Bussard had straightened up again. He appeared to be talking to himself. Elgin thought he heard him say, "Five times. That's five times. Five."

Stanton called out, "Buzzard. I see you're done."

The face that swivelled atop the long, curving neck was wearing a delighted smile. "That's five, boss. All five. All good."

"That's good. Come on over here. I want you to meet your new partner." As improbable as it seemed, looking at his long, gangly body, Bussard was a graceful flyer. He turned his upper body in their direction and gave a single half-flap of his wings. The rest of his body followed as if he was towing a banner. When he arrived it felt as if they had to wait awhile for all of him to get there. That unconscious comfort in his body and the open, happy look on his face immediately won Elgin over.

"Buzzard, you remember me telling you about Elgin. Well, here he is at last, eager to get to work."

Bussard stuck out his hand. "Elgin. Knows when it's right. When it's wrong. Right or wrong." His handshake was light but firm.

"Pleased to meet you, Bussard," said Elgin.

"Buzzard. Boss calls me Buzzard. That's my work name."

"Okay, Buzzard. Stanton tells me that you're good with details."

"Good with details." Buzzard nodded, preening a little.

"Did I hear right? Did you just do something for the fifth time?"

"Five times. All right. All five."

Stanton interjected. "That's Buzzard's baseline. If it comes out right five times he gives it a conditional pass."

"That's right. Five times, conditional pass. Ten times if it's important. If Boss, Stanton, Boss says it's important."

Elgin was impressed. "I admire your focus, Buzzard. I'm glad I'll be working with you."

"Glad I'll be working with you too, Elgin. Knows if it's right or wrong. Elgin." He looked at Stanton. "Boss says Elgin is good, so we'll see."

Elgin and Stanton exchanged sheepish smiles. Elgin could see that working with Buzzard was going to be interesting, to say the least. But he had no doubt that he was a good engineer, or Stanton wouldn't have him here.

"Okay, Buzzard, I've got some work to do. You show the new recruit around." Stanton went to his office, but he left the door open.

Buzzard completed the tour that Stanton had begun. Elgin had already been around the outside and now he got a look at the work table, obviously the most important part of the room and definitely the most interesting. It was oblong, about five meters by three. The sides had drawers and shelves and slots, punctuated by kneeholes. The top, barely visible now under sheets of permapaper, had sections that could be tilted for drawing on, and the whole thing could be lighted from underneath.

Elgin learned where his tools would be. "Those are yours. You can use any of those," said Buzzard. "These are mine. I use these. Only me." He was standing protectively, as if he was shielding them. He had an anxious look on his face, but also apologetic, as if he knew he looked unreasonable.

"I understand," said Elgin. He looked right into his new workmate's eyes, made real contact. "I understand." He saw Buzzard relax, the look of simple delight returning to its accustomed place. "Say," he said, "is that a Sharpright?"

Buzzard snatched it up and held it out for Elgin to see. "Sharpright," he said. "Best pen for the job."

Elgin recognized the company slogan, just as he remembered the drafting pen, even though it was eighty years and more since he had seen either one. "May I?" he asked, holding out his hand. When Buzzard hesitated he said, "Never mind."

Buzzard struggled for a moment, then gravely extended his pen. "It's okay. Elgin understands."

Elgin took the pen, hefted it, felt its mass and familiar contours. Handing it back he said, "That's a good pen, Buzzard."

"Best pen for the job," said Buzzard, almost snatching it back. He examined it closely then, satisfied, clipped it securely to the desk at his workstation. His glance showed Elgin both challenge and apology. When he saw no censure or disappointment in Elgin's face he continued staring for a long moment to be sure, then smiled. "It's okay," he said firmly. "Elgin understands."

He finished by showing Elgin what they were working on. All the bits and pieces of different projects scattered over the desk top, waiting at various stages of completion for Buzzard's penetrating attention. When they were done their circuit of the table he asked, "What's wrong? What's not right?" He was plainly struggling to get the right words. "Right and wrong. Elgin knows." He trailed off, forcibly stopped himself, although his mouth kept moving.

"Well, it's not quite that simple," said Elgin, then hurried to add when Buzzard's face fell, "but there was one thing that I noticed." He flew across to the other side of the table and picked up a piece of paper half-covered in precise and very neat script. "I happened to look at it and it stood out."

"What's wrong? What?"

"There's nothing really wrong with it," said Elgin. "It's just that it's," he searched for the right word while Buzzard watched him with a good imitation of his namesake, "incomplete."

Buzzard's face lit up. "Yes. Incomplete. Not completed. Not done." He went on to explain how this was a first estimate on the problem of lateral shear forces in the contact area where the two comets would be joined. They didn't have all the data they needed yet because the surveys of the structure and properties of the materials in the contact zones weren't completed. "Incomplete," he said. "Effay."

It took Elgin a second, then he remembered. "Oh, right. First approximation."

"Effay," said Buzzard. "Effay." He nodded to himself for awhile, then said, "Elgin knows. Right and wrong." It left Elgin with a sense of gratitude and relief, as if he'd passed a test.

"But it's only because that piece of paper happened to catch my eye," he told Buzzard. "If I hadn't looked at it then I wouldn't have known anything was wrong with it."

"Maybe. Could be. Maybe it caught your eye because it was wrong."

Elgin laughed. "I don't think so. It's not magic."

"How do you know?" asked Buzzard with a sly look.

"Come on, Buzzard. I promise you it's not magic. It's just the way my brain works."

"Then why that piece. Why not another piece? Why that one?"

"There were other ones," Elgin stressed. "Plenty of other pieces caught my eye. That was the only one that didn't look right."

Buzzard mulled it over, his eyes roving over the table. Elgin waited patiently while he sorted it all out. Finally he looked up, the delighted smile back in place. "It's good," he said. "All good. Elgin knows, but it's not magic. Not magic."

"Yeah," said Elgin. He looked around, ready to get on, but Buzzard stopped him.

"My brain's not magic either," he said. "Not magic. Just the way it works."

"How do you know?" asked Elgin with a mischievous smile.

Buzzard peered at him, then started to laugh. Elgin laughed with him, realizing that he was relieved to find he had a sense of humor. Then he was embarrassed to have worried about it. Because Buzzard acted a little strangely and, yes, looked strange too, Elgin found himself ready to think he wouldn't be normal in other ways. That galled him, and he chastised himself for it. He swore a silent oath that he would never allow himself to condescend to this man again.

"What's wrong Elgin?" asked Buzzard. "Right and wrong Elgin."

"Nothing's wrong Buzzard. I was just realizing, thanks to you, that neither of us has a magic brain."

"Not magic," affirmed Buzzard. "Just the way they work. They work."

"They sure do. Speaking of which, do you mind if I look at what you were working on when we came in?"

"Sure," Buzzard said, flying back over the table to get it and turning back without stopping. He was handing the paper to Elgin almost before his feet made the turn on the other side, or so it seemed. "All five. All good. Nothing wrong."

Elgin's first glance confirmed that, but he wasn't looking for errors. He was quite sure there wouldn't be any. This was the first thing he'd seen Buzzard doing and he wanted to have a good look at it. He let himself into the dense patterns of perfect script and wandered there for awhile, Buzzard waiting patiently.

Normally when Elgin saw good calculations or accurate drawings he felt it in his body as well as just knowing it. His joints aligned themselves and his innards nested comfortably with each other. The immaculate detail and precision of Buzzard's work took him beyond that. The symmetries that he sensed in this piece of engineering reached deeper into his body than usual, almost down to the level of his cells. He felt the stress lines, no, the lines of energy flowing smoothly through him. It felt as if his insides were having a nice refreshing shower.

He surfaced and looked at Buzzard. "That was wonderful," he said. "Thank you."
"All good?"

"Definitely all good. Maybe the best all good I've ever seen."

Buzzard grinned his delighted grin. "Elgin knows," he affirmed. "All good."

"Yes," agreed Elgin, "and no magic required."

"No magic brains," said Buzzard, and they both had a good laugh at their new inside joke.

Beyond the open door to his office, Stanton listened to the easy laughter and smiled with gratification.

Chapter Nineteen – Elgin Plays Flashball

Elgin's first day of work was very productive, even if it was pretty much more of the same thing. Buzzard was checking the work assigned by Stanton to the main crew of engineers, who worked in another office. "The pencil pool. Stanton calls them the pencil pool," said Buzzard. "Good engineers. Good engineers. No surprises."

Elgin could see that in the papers he was examining. The work was good, neat and complete, but uninteresting. There was nothing that could be called daring. "Pretty reliable then?"

"Very reliable. Very dependable. Predictable," Buzzard said, nodding. "Except one. One's not predictable."

"Oh?" said Elgin, looking at the papers. "Who?"

"Not here." Buzzard seesawed a hand, a dubious look on his face. "Nothing lately. Comes and goes."

"Unreliable?" Elgin was shocked. To him the goal of an engineer was to be accurate and consistent. The idea of being anything less left him indignant.

"Me too," said Buzzard. "Bad work. Bad engineer." He had a stern, disapproving look on his face. "But Stanton wants him. Says, 'I want him to surprise me. I know he's wrong most of the time, but once in a while he's surprisingly right.'"

Elgin said, "Ah, I see."

"You see? You get it? You see?"

"Yes, I think." Buzzard was looking at him sceptically, but also hopefully, as if Elgin might be able to make him see. He tried. "He's got a whole crew that can churn things out for him. And he's got you to scrutinize their work." Buzzard nodded. That's exactly how things should be. "Everything will get done this way. That's covered. So he can afford to have one wild card."

Buzzard scowled, trying to get it, then shook his head emphatically. "Mistakes," he said. "Mistakes. Mistakes."

"But he's got you to catch those, and he's got the gamble that he'll get that one beautiful surprise."

Buzzard scowled some more. He tried hard, but just couldn't see past the bad work. He shrugged at Elgin, looking defeated, as if accepting that some things were forever beyond him.

"Don't feel bad, Buzzard."

"Don't feel bad. Stanton wants him. Boss Stanton."

"Yeah. He's the boss. He's got his reasons, right?"

"Elgin gets it. Elgin knows." Buzzard had to settle for pragmatism. "It's best. Best."

"If it will help, I'll check the guy's work and pass it straight to Stanton." He could at least remove the irritant.

"No. My job." Buzzard looked resigned but proud. "My responsibility."

"Okay." They went back to work. Elgin was scanning submissions and separating them into a good pile and a bad pile. Buzzard was checking papers too, but he was concentrating on the ones from Elgin. The bad pile he put aside for later and the good ones he subjected to his penetrating analysis. He muttered, "We'll see. Now we'll see."

It didn't take Elgin very long to work through what was there. The only thing that slowed him down was finding out that he could get tired if he did too many in a row. He discovered the problem when he found himself looking at a paper and thinking it was blank. "Buzzard," he said, "here's a blank one."

Buzzard glanced at it. "Not blank. It's not blank," he said and went back to work.

Surprised, Elgin looked again and found he was right. But when he tried to parse it, it went blank again. Some experimentation showed him that it wasn't the paper, it was his mind. That's when he realized that it was a symptom of fatigue. Now that he noticed it, he could feel something like a ghostly cramp in the area that he associated with his talent. He stuck the paper to the table, peeled off the stool and flew over to the galley.

He made some coffee, put a cup next to Buzzard, who grunted acknowledgement, and cruised around the room sipping at his. There wasn't much to look at so he found himself covertly watching Buzzard, who was assessing his work. He realized that he was feeling a bit anxious about it. He had grown up with his talent, maturing in concert with it, and almost took it for granted. He never questioned its assertions, simply accepting them. But now, with Buzzard subjecting his work to an unprecedented level of scrutiny, he felt a bit insecure.

Finally Buzzard put the paper aside. "All done," he said, and Elgin's heart skipped. "All five." Elgin held his breath. "All good." Elgin sighed in relief. Buzzard looked at him and said, "Elgin knows." Then he took the five papers he had examined five times apiece, papers that Elgin had already passed as good, and put them on the pile that would go to Stanton. To Elgin's intense pleasure he then took the rest of Elgin's good pile and added them directly to the Stanton pile. He was pronouncing that Elgin's judgement was adequate. He grinned at Elgin. "Elgin knows." he said.

That took care of that. As far as Buzzard was concerned, he had carried out Stanton's instructions. Elgin's talent was the real thing and could be trusted. Now he could get back to his regular work.

When Buzzard started in on his pile of papers Elgin flew over and offered to help out by taking some. He didn't have much left himself and thought they could speed things up if they evened out the load. Buzzard turned him down. "My job," he said. "My responsibility."

Elgin went back to his little pile and was pleased to find that he could see them again. His talent, whatever it was, seemed to be rested enough. He had no further problems with what remained and soon had everything separated into two piles. He still put them down for Buzzard's attention. He didn't feel it was his place yet to put them straight onto Stanton's stacks.

He must have done something that communicated his restiveness right through the shell of concentration surrounding Buzzard, because the lanky body straightened up and he was treated to a deep scowl. Buzzard said, "You have to find something to do. Find something to do." He waved at the papers still covering the table. "Read those. Read them all." And as he descended back into his work he said, "Figure out what we're doing. What we're doing."

That was something Elgin could do gladly. He'd had a quick look at some of it earlier, but then they'd got into the submissions from the pencil pool. He smiled at the image of a pencil pool, complete with a sprightly sound track, as he browsed the scattered papers hoping for something to catch his eye.

He wasn't sure how much later it was when Buzzard's voice brought him back to the present. It was saying something about lunch and his stomach was growling its emphatic agreement, but he had no idea what time it was or how long he'd been lost in the fascinating plan taking shape here.

Bringing two comets together, one sixty kilometres in diameter and roughly spherical, the other forty and less so, and fusing them into one was a fantastic idea. The papers on this table were taking the idea and distilling it into numbers. They broke an awesome concept into manageable parts, showed how the parts would each be executed, and how the parts would work together.

Elgin's mind was right inside the contact zone when Buzzard spoke. He could see the materials of the two comets being processed into the structural elements that would bind them together, while they were slowly inched together, closing the resulting gap. It was a grand and beautiful symphony of the many smaller parts evolving in unison. Not only had he figured out what they were doing, as

ordered, he was able to visualize it in realistic detail.

"Did you figure out what we're doing? What we're doing?" asked Buzzard, pulling him toward the door. "Time for lunch," he said. "Past time. Way past."

Elgin didn't say much. He just let himself be pulled along while he negotiated his way back to this reality.

The second day was completely different. Working together Elgin and Buzzard had made short work of it the first day, and there weren't enough new papers coming in to justify hanging around the shop. They left Stanton grumbling about paperwork and set off for the flashball arena.

Once there they flew around the outside of the big ball, Elgin gesticulating as he tried to explain. "The stress lines, you see? They're broken by the opening." He tried to indicate it with sweeping gestures.

Buzzard wasn't seeing any lines. All he saw was the big beautiful ice stadium that was designed by his boss. "Stanton's work," he said. "Stanton."

"I know," said Elgin. "Stanton saw the lines. He said he wants me to fix it."

"Yes. He told me. 'Let Elgin fix the ball. See how he does.'" Buzzard didn't look happy about it, but if that's what his boss wanted then it would be done.

Even though he couldn't see the lines or sense where they were broken, Buzzard could understand it. He could see how the form had to be smoothly transferred from the spherical shell of the ball to the struts that would anchor it to the walls. Once he saw that he was able to help Elgin visualize a plan.

They flew all around the ball, outside and in, taking measurements and trying to imagine what it would look like when it was done. Elgin was at the very center of the sphere, slowly turning, fixing the picture in his mind. While he was occupied, Buzzard entertained himself by pretending he was playing flashball. He swooped and soared in all parts of the space, pantomiming catching and throwing the ball. The graceful flow of his long, willowy body made it look more like art than sport. His usual intense concentration had him so focused that it was a few minutes before he was aware that Elgin was watching him. He stopped immediately, flustered.

"Don't stop on my account. That was great." Elgin was sorry to have embarrassed his friend. "Did you ever play flashball?"

"No. No good. Too gawky." Buzzard's mind seemed to go inwards to his memories. "You're too gawky. You can't play."

"You're not gawky at all. You're very graceful. Who told you that?"

"Everybody. Kids. Other kids. 'You can't play with us.'" Buzzard looked really glum. "Father."

"Well they were wrong, Buzzard. I don't know. Maybe you were clumsy as a child or something, but you're a natural flyer now."

"Too late now. Too late."

"I don't know about that." Elgin moved toward the exit and they headed out. "Stanton says I should play flashball. What do you think about that?"

"Stanton said it. What do you think?"

And Elgin knew. He knew Stanton was right. He had known the first time he heard it, but it was too personal for that. If it had been about anything else his instinct would have expressed itself, but it didn't work that way when it was about him. Only by talking about it in this removed way could his senses do their usual thing. "I think I should look into it," he said.

"You're going to play flashball?"

"I'll give it a try and see what happens."

"But you're still," Buzzard looked at him, at the way he was flying, and finished gently, "learning. You're just learning."

Elgin laughed. "You mean I fly like a fish walks?"

"No," said Buzzard. "Fish don't walk. Most fish. Some fish walk. Not really walking." Then he saw Elgin grinning at him. "Oh, I get it. Fly like a fish walks. Fish walks." He got that delightful smile that Elgin would come to love and he let loose a satisfying laugh.

"So, how about it?" Elgin asked. "If a flying fish like me can do it, do you think you might give it a try?"

They'd left the ball and were entering the corridor for the flight back to the shop. Buzzard didn't speak for a long time, then he finally said, "Talk to Stanton. I'll ask Stanton about it. Ask Stanton." He was quiet the rest of the way back.

When they got there Stanton's door was closed. Buzzard looked really disappointed and made two aimless circuits of the room before settling on his stool. He grabbed some papers and picked up his Sharpshooter. He was just beginning to work on them when Elgin got to the table with coffees.

Leaving one for Buzzard, Elgin took the other around to his place. He checked some slots and opened a few doors and drawers before he found some blank permapaper. He spent the rest of the day working up the plans for the alterations to the ball. He barely registered it when Buzzard went into Stanton's office, and again when he came out. But there was no ignoring him for long. He was fitfully flying from place to place, and Elgin could feel him looking. He lifted his head and said, "How'd it go?"

Buzzard let it come bubbling out. "I'm going to try it. Try it out. 'Give it a try, Buzzard. You might like it.'" He swooped around the room with his trademark sinuosity. "Try it out."

"That's great. We'll go together. Maybe we can be on the same team."

"Go together. Same team." Buzzard caught and relayed an imaginary flashball. "Go tonight."

Elgin was just getting back into his work when he caught that. "Tonight?" he asked.

"Go tonight. After work." Buzzard grinned, sharing the excitement. "Stanton is setting it up. Old friend." He swung back into his game.

Tonight. That seemed a little sudden, but it didn't take Elgin long to get used to the idea. If you're going to do it you might as well do it, he thought. He watched his friend, smiling at his antics, then he went back to the plans.

It took him most of the rest of the day to put together a first draft. As he finished each part he handed it to Buzzard for his scrutiny. Buzzard was surprised at first that he wouldn't want to give it straight to Stanton. "You're not in the pencil pool," he said.

"No, but I want it to be good and it's harder for me to tell when it's my own work. And I know you'll spot anything I miss."

So Buzzard took the papers and looked them over. "But only twice. Not five times. Twice." He put the papers in a neat stack and took the top one. "Not in the pencil pool."

They worked together this way, not saying much but cementing their young friendship. Each one was lucky enough to respect the other's ability, and to see it as an asset rather than a threat. Stanton, standing quietly in his doorway, was deeply gratified to see their natural interaction. Two young men who seemed so different superficially. One very much the ideal in his form; an athletic mesomorph, very close to the norm in most measures, slightly better where it mattered. The other very far from the norm; an ectomorph whose dimensions were far from average, who could easily be dismissed for his appearance and for his behavior. Looked at in one way they would seem to be incompatible, to have nothing in common. But when they were put together they hit it off right away. Stanton congratulated himself for his lucky hunch.

Just before the end of the day Elgin finished. He added the last paper to Buzzard's stack and

launched himself for a little fly around the room to get the kinks out. He saw Buzzard straighten his stack unconsciously without breaking his concentration, while continuing to check the work. Elgin decided it would be a while and because he didn't want to hover he began to practice what he imagined would be flashball moves.

It was quite a while, or it seemed it anyway. Elgin tried to be casual, finding things to do while he waited, but he found himself glancing in Buzzard's direction every minute or so. When his friend finally sat up and said, "Both done. All done," he was over there right away.

"How is it?" he asked.

"All done," said Buzzard. "All good."

"All good? Good enough?"

"All good. Effay."

"Ah, right," said Elgin. "Effay. So it's not perfect, but good enough for a first draft?"

"Good enough. Show the boss." Buzzard flew over to the galley. Over his shoulder he called, "Flashball practice pretty soon."

"Oh, right. Flashball." They had less than an hour. He scooped up the papers, noting that Buzzard had kept them in perfect order, and headed for Stanton's office. He found the door open but didn't feel that comfortable yet, so he stood in the entrance and rapped for attention.

"Come in. The door's open," called Stanton, and Elgin ventured inside.

"I've got the drawings for the flashball court," he said. Stanton was behind a desk, facing the door, so Elgin kicked and drifted over. It was a large office, a good ten meters square, and of course the ceiling was high. Looking around, Elgin noticed that it was quite bare. There were no pictures or other decorations on the walls, no furniture other than the desk on the floor. On the desk, besides papers and the tools and equipment he needed to do his job, Stanton had one object that wasn't strictly utilitarian. It looked like a pale yellow blown glass sphere. Elgin wondered if it was meant to represent the large ice sphere he was working on. That gave him a little chill of worry. If Stanton thought so highly of his creation that he honored it this way, maybe Elgin was being cavalier in wanting to alter it.

"How did it turn out?" Stanton asked, reaching to take the papers.

"Pretty well I think." Elgin handed them over, then just hovered where he was since there wasn't anywhere to sit.

"Did you get Buzzard to look at it?"

"Yes. Definitely."

"Good. What did he have to say?"

"Good enough," said Elgin with a smile.

"Good enough for what?"

"Good enough considering it's a first draft, I think."

"Alright. I'll look at these later, when I can do them justice." He put the papers on his desk. "For now, why don't you give me the gist of it? Paint me a picture."

"Okay," said Elgin, and he began to describe the changes that would be made. Currently it was a hollow sphere with a half meter thick shell of ice. It was one hundred meters in diameter and had one hole three meters across where the players could get in and out. The plan was to attach the sphere to the walls of the gallery with two hollow tubes of ice, one at the present entrance and another directly opposite. The joints between the ball and the struts would be curved, smoothly transitioning from one to the other.

As well as being anchors, the tubes would be the access points for the players. They would be twenty-five meters long and fifteen wide, larger than they needed to be for passage, but big enough that they wouldn't clash with the size of the ball. The tubes were to have two lenticular shaped openings each, in their sides near the gallery walls. Their shape allowed the lines of stress to flow smoothly and

they permitted access to the interior of the tube. From there the players would fly the length of the passage to a small door in the wall of the ball. From the outside it looked as if the sphere curved into the tube, but inside it was obvious that it was continuous.

Elgin stopped sculpting the air with his hands to say, "With two entrances the teams could enter the ball from opposite sides."

"No," said Stanton. "It's a good idea but it would conflict with the ethos of the game."

"Oh?" said Elgin. That hadn't occurred to him. He was just thinking that having opposite entrances would be symbolic of the competition.

"Yes. This just kind of happened and now it's almost like a tradition. The teams always enter and exit together. It's a sort of a comradely good sport thing."

"Oh," said Elgin. "Okay. That'll save us having to make openings in one strut, anyway."

"No," said Stanton, "leave them in. It's good to have two exits, remember?"

"Right, of course." Elgin smiled wryly. "Man, sometimes you get so involved in the details that you forget what you're doing."

"Do tell."

"So the teams always enter and leave together. That's like," Elgin paused, "it's like they're really one team. Kind of."

"I never thought of it quite like that," said Stanton, "but I can see what you mean."

"I mean they're competing against each other during the game." Elgin demonstrated with his hands. "But it's kind of like they're competing together, too." He clasped them. "If you know what I mean."

"I do get the idea," said Stanton, "but I'll have to think about it." Stanton began ushering him toward the door. "I'll have a look at the plans and I'll let you know what I think tomorrow." He pushed him through the opening. "Don't you have flashball practice?"

"Flashball practice!" He turned to go. "Wait. Where?"

"In the ball," his boss said, smirking. "There's usually an audience."

"An audience? Wait. An audience? At a practice?"

"Yes," said Stanton as he closed the door. "It's a very popular sport."

Elgin felt panicky. He was barely ready to try the game. He knew he still flew clumsily and he wasn't sure they would even want him on their team. They were probably just giving him a tryout as a favor to Stanton anyway. He was willing to go out and make a fool of himself because his boss thought it was a good idea, but in front of an audience?

The idea bothered him, but not enough to change his plans. It faded as he was flying back to the ball and he didn't think about it again until he entered the gallery and saw several hundred people milling about. That made him nervous again and he was very self-conscious as he went past them toward the entrance. But then Buzzard called his name and he saw him protruding from the opening, grinning and waving come on.

That helped a lot. Now he felt more like he belonged here and he flew the rest of the way with more of a sense of purpose. Buzzard kept encouraging him all the way into the ball, then turned and led him toward a knot of people about ten meters in. They turned as Elgin approached and stared openly at him.

"This is Elgin," Buzzard announced as they approached. "Elgin." He reached out and pulled him forward. "Told you about him. Said he was coming. Elgin." He turned toward one of them. "Rita," he said. "Captain Rita. Coach Rita." Then he indicated the man next to her. "Lewis. This is Lewis." Buzzard gave Elgin a glance. "Lewis and Rita. Rita and Lewis." Somehow Elgin understood that there was a connection between them. "Don't know the rest yet. Don't know."

"There's plenty of time for introductions later," said Rita, proffering her hand. "Nice to meet

you, Elgin.” Lewis also came forward and shook his hand, and Elgin exchanged nods with the rest. “Stanton's told me a bit about you,” said Rita. “I understand you're a new waker?”

“Yes,” said Elgin. “Completely new.”

“Well, don't worry,” she said, “we'll take it easy on you at first. Before you know it you'll almost be keeping up with the rest of us.”

“Thank you,” said Elgin, looking at the rest of the team doing drills in the middle of the ball. They weren't even going at it hard and he couldn't imagine keeping up with them, even almost.

“Okay,” she said, “welcome to the Harriers. Now let's get to work.” She clapped her hands. “We've only got the ball for an hour so get out there and show me what you've got.”

Elgin was going to ask what he was supposed to do, but Buzzard grabbed him and dragged him out there. “Come on,” he said. “We just copy what they're doing. Just copy.”

Elgin was the worst flyer there. That didn't surprise him, but the degree of his badness did. He had thought he was beginning to get the hang of it, but being out here with people who really could fly disabused him of that conceit. Compared to him even Buzzard, gawky as he was supposed to be, looked good. He couldn't keep up in the sprints, made a flapping mess of the turns, missed nearly every ball that was thrown to him and couldn't hit a stationary target, much less a moving one.

He spent the entire hour trying to catch up. This was supposed to be taking it easy on him? He was tired well before it was over, out of breath soon after it started. But every time he messed up he set his jaw and threw himself back into it, except when he wasn't able to because he was laughing at himself. Captain Rita smiled. Stanton was right about this Elgin.

When it was finally over they all gathered around her for her appraisal. “That was pretty good,” she said. “You're finally coming together as a team.” Everyone was catching their breath so they just listened. Everyone except Elgin. He didn't know if he would ever catch his breath again. He was panting. If there were gravity he would be bent over with his hands on his knees. She said to him, “Elgin, I was particularly impressed by you today.” He wasn't able to reply so he looked at her, dumbfounded. “You're obviously not as good as the rest of us,” she said with a wink. That brought some laughter from his teammates and a rueful smile from him. “But I admired your effort and the way you stuck with it.” There was a solid chorus of agreement to that. Elgin nodded and weakly waved a hand.

Rita then turned to Buzzard. “When I first saw you,” she said, “I wasn't too sure why Stanton sent you over here.” Buzzard was listening with his trademark focus. “Elgin, sure. He may be a new waker but he has a flyer's physique. But you're built all wrong. You can't make any of the tight turns that we need in this game.” Buzzard's face was starting to fall. “But watching you work out, I see what Stanton must be thinking. You're so smooth. You flow as much as you fly. I'm already thinking about how we can use that.” She looked at both of them and nodded to the rest of the team. “We have two new members, Buzzard and Elgin.” There was a murmur of welcome and some applause.

As they were breaking up she fell in with the two of them. “So,” she said, “what's this I hear about you changing the ball?” While they flew out of there, Elgin and Buzzard tried to explain. Elgin had almost caught his breath by then, but Buzzard got too impatient and kept interrupting. He even got in on the hand waving, trying to explain the lines of stress.

Chapter Twenty – Elgin Fixes The Ball

Elgin worked full time on the ball after that. It was his first big project where he was in charge. Of course Stanton was still his boss, but he made it clear that he wouldn't interfere. He told Elgin that he would like occasional progress reports, but that he didn't want to hear about any problems. "This is your project, Elgin. Success or failure, you take full credit." Stanton gave him a wicked smile. "Try not to disappoint the players, or the fans."

That gave Elgin a chill. Up to that point it had been an engineering problem, to be solved with applied mathematics. Now, suddenly, it involved ten thousand people and their feelings about their beautiful flashball arena. He swallowed. Then he nodded. "You got it boss." He made a decision and a promise. "Three weeks. It'll be done in three weeks, with no more than two days of down time."

"Don't make any promises you can't keep."

Elgin sensed that Stanton was offering him some advice. "Right," he said. "Four weeks and four days."

"That's better. People will forgive you if you finish early, but they'll never forget if you finish late." Stanton was satisfied, and moved on to the next topic. "Now, you're going to need a couple of assistants. I can recommend some if you'd like."

"Yes please," Elgin said. So Stanton lined them up and made arrangements for them to come over. There was no problem. They simply put what they were doing on hold and came the same day. It was the same with the people who would be fabricating the parts and those who would be assembling them. Even the job of ferrying the big tubes through the corridors had a strong surplus of applicants. Stanton's ball was such an iconic structure that anyone would feel fortunate to have the opportunity to work on it.

"A lot of people look up to you, don't they?" said Elgin.

Stanton looked at him. "What do you mean?"

"Well, look at it. One call from you and everybody is ready to drop everything to work with me." Elgin chuckled. "I'm pretty sure it's not my magnetic personality."

Stanton didn't speak, just stared. There was nothing unusual about this situation. When he needed people he called them, and they came. It just seemed perfectly natural to him. "What do you mean?"

"Oh, come on. What do you think would happen if I called them?"

"Let's give it a try," said Stanton. "You're going to need finishers to polish the welds and so on. You call them and we'll see what happens."

"Okay." They made the call and got the querulous, harried voice of someone who was obviously in the middle of something. Elgin explained that he needed some finishing work done and wondered whether they'd be interested. No, he didn't just pull the name out of a hat, he was following a recommendation. Whose recommendation? Elgin couldn't reveal that for the purpose of this experiment, so he simply assured her that it was a hearty endorsement of her abilities and hoped she'd overlook the lack of an answer to her question. She did, although he could tell that she knew he was being evasive. She finally asked what the job was.

"I'm doing some modifications to the flashball court and I need someone to finish the welds and so on."

"The ball? You're changing the ball?"

"Yes," said Elgin, "but it's okay. Stanton okayed it."

"You're working on Stanton's ball, eh?" She paused for only a second or two. "When do you

need me?"

Elgin explained his planned schedule, with tentative days for the installation of the tubes, whose welds she would be finishing. "But you can come by any time, and I'll be sure to call you in plenty of time when I need you."

She made it clear that she would be coming by and said goodbye. Elgin looked at Stanton and said, "I don't know if that was a promise or a warning."

"It was both."

"Should I be worried?"

"Not unless you do something wrong. She's a perfectionist about her own work, which is good for your project, but it carries over to other people's work." Stanton grinned. "She worked for me when we first made the ball." He shook his head at the memory. "It can be hard, but she's the one you want."

"I'll take your word for it."

"And with her on your team, you won't need me looking over your shoulder."

"Thanks, I think."

"On the other hand, you won't have to worry about the rest of your team either. They won't want to make any mistakes and have her on their case."

"That's good." Elgin thought about it. "I wonder why she doesn't just take over and lead the project."

"Two reasons. First, this is your project. You're the one who's going to be finding out about himself. Second, she's a perfectionist. The job would never get done."

"Oh, I see," said Elgin. "So, did we prove anything?"

"Yes, she's coming even though I didn't call her. You hardly even mentioned my name."

"That's right, but she only got interested when she found out she'd be working on your ball."

"But not that she'd be working for me. There's a difference."

"That's true, but I wonder how it would have gone if it was something else. Something that had nothing at all to do with you."

"Hm," said Stanton. "I see your point. Knowing her, I think she might have just told you to 'piss off.'" He nodded, smiling. "Yup. Probably in so many words."

"So I was right. It's you everyone respects."

"I guess you're right," Stanton said in a subdued voice. He roused himself to say, "Get out of here. Get to work before you give me a swelled head."

"I'm on my way," said Elgin, leaving Stanton's office. "I'll give you a report every day." He went out into the drafting room to wait for his assistants, and Stanton closed the door behind him.

When they arrived, Elgin briefed his new assistants on the project, showing them the plans and his projected time line. They kept glancing at Stanton's door until he explained the situation to them. Once they realized that Stanton definitely would not be involved, they seemed to resign themselves to accepting Elgin's supervision.

The man's name was Van Allen and the woman's name was Laika. They were both a little younger than Elgin, about their mid-twenties. They shared their stories on the way over to the ball, and Elgin was struck by how everyone's path seemed to share some common steps even though they were all different. Of course they had all been rushed along when the need arose to repopulate Yellow Comet, so decisions were somewhat hurried and farewells were left feeling incomplete. Maybe that was it. Whatever it was, it gave them a sense of shared history and made working together just a little easier.

Elgin left Laika and Van Allen – call me Van – studying the ball while he went to talk to the

fabricators and assemblers. Now that things were underway he wanted everyone involved to know what his plans and expectations were. They met at the fabrication rooms, a series of large galleries whose temperatures and air pressures could be controlled as required. Only an hour or so was needed for that, and he left there with the fabricators and assemblers sorting things out between them. He left it up to them to make arrangements with the crew that would be ferrying the pieces, but he called the members of that crew and set a time and place where he could brief them.

Back at the ball he found Van Allen and Laika having an argument. Once he got them settled down he learned that Van Allen wanted to make some changes to Elgin's plans and Laika didn't agree. Elgin headed off another flare-up by asking Van to explain his idea. He had to tell Laika to let him talk, she was so vehemently opposed.

Van wasn't able to make it very clear, but it was obvious that he thought there was something wrong and he had an idea of how he would correct it. There wasn't much detail there but it was enough for Elgin to know it was wrong. He told him so.

"How do you know?" asked Van. You've hardly even looked at my idea."

"Shut up, Van," said Laika, adding to Elgin, "He always does this."

"I do not!"

"Yes you do. You always want to change things, to put your mark on them."

"I do not!"

"Whoa, whoa!" said Elgin. Once he got them calmed down he said to Van, "I wrote these plans myself. They were checked by Buzzard and approved by Stanton. They're good and we're not changing them."

Laika had a triumphant look on her face. "See?" she said.

Van looked as if he wanted to argue but the mention of Stanton, and probably also Buzzard, made him think better of it. "Okay," he said with a hot glance at Laika.

"Good," said Elgin. Then he confirmed his authority. "If either of you isn't happy with this assignment I can get Stanton to recommend someone else."

They both reacted strongly. "No!" they said, almost in unison, followed by alternating bursts. "We love this assignment." "Don't get anyone else." "We always do this." "We like to work together."

"Okay then," Elgin said. "If you're sure." He listened to their earnest assurances. "Good. I'm going to be relying on you to get this done right." They promised, and he went on to tell them what he wanted and what he expected. They would work together and coordinate their activities, but Laika would be his liaison with the fabricators, Van with the assemblers. "I'll want a brief report each morning and a more complete one each evening. Any problems that you can't resolve between the two of you, bring them to me. Whatever you do, Stanton has told me he doesn't want to hear about it. Is that clear?"

They told him it was. Elgin took them on their word and was about to leave when Van said, "Wait."

"Yes?" said Elgin, wondering what part of his instructions he could have missed.

Van glanced at Laika, who was watching him through narrowed eyes. He said, "You're a new waker, aren't you?"

"Yes." Elgin glanced back and forth, wondering what was going on.

"Well, have you heard about the Visitor yet?"

"Shut up," said Laika. "He doesn't want to listen to your gossip."

"What gossip, I mean, what visitor?" asked Elgin.

Van smirked at Laika and told Elgin all about the mysterious Visitor, the blinking light in space and all the speculation about it.

"And no one knows what it is yet?"

"No, but everyone's pretty sure it's artificial, mostly because of the coherence of the light."

"So they sent out a ship to meet it."

"Yes," said Van, his eyes bright. "I'd love to be on that ship," he said. Laika was nodding, just as bright-eyed. "If I wasn't here, I mean."

Elgin left them to their excitement and headed back to the shop, his mind dancing with new energy. When he got there he found Buzzard deep in his work, so he couldn't talk to him, but Stanton's door was open. He flew straight in this time, no longer hesitant about it, and right across to the desk.

"Ah, Elgin," Stanton said, looking up. "How was your first morning as a project leader?"

"It was fine. It was great, really." Elgin gave a quick rundown, including a mention of the friction between his assistants. "It's not a problem," he said. "I handled it and they seem to be getting along okay."

Stanton was laughing. "Van and Laika," he said, shaking his head. "They're as compatible as oil and vinegar, aren't they?"

"This is normal?"

"Yes. They're like that about everything. You think they're fighting but that's how they work together. Like oil and vinegar, their conflict seems to make them a perfect combination."

"They said they like to work together."

"One of the best teams I have."

"Couldn't you have warned me, though?"

"What, and miss the chance to test your managerial skills? No, it was the perfect opportunity and a safe situation at the same time."

As if he hadn't known it before, Elgin realized that this assignment was as much about testing his abilities as it was about modifying the ball. "Well, it worked out okay I guess." He stored that one away and brought up the topic that was really prodding his curiosity. "Van said something else. What do you know about the Visitor?"

"The Visitor? Wow. I haven't thought about that for ages."

"An artificial light that seems to be coming from interstellar space? How can you not think about it?"

"Sure, it's amazing, but there hasn't been anything new for months now. We get small bits of information separated by long periods of nothing, and it's been going on for decades."

"I can see that, I guess."

"It's new for you though, isn't it?"

"Yeah, that must be it," said Elgin. "I guess I got decades of information compressed into a few minutes."

"That would make it sound more exciting. Anyway, it's all on record. You can look it up any time."

"I'll do that."

"Meanwhile, if you have some time to spare, there's something I want to show you."

Elgin thought about it. "Sure. Things will take care of themselves for a while."

"Good. I want to take you to the observation bubble. There's something there you should see."

"I'm going! I'm done! I'm going to the bubble too!" came a shout from the outer office. Obviously Buzzard overheard.

Stanton grinned. "Of course, Buzzard," he called. "You're coming. That was the plan." He led Elgin out. "Whenever you're ready, Buzzard."

"I'm ready now. Done. All ready." Buzzard straightened his papers one last time and came away from the table.

Once through the Square and into the corridors, they quickly got into territory Elgin had never seen before. He got the sense that they were going up. It wasn't something he could tell from gravity, but by the convention of up and down in construction. He knew they were heading for the surface.

It didn't take long. It couldn't have been more than a few hundred meters, a kilometer at most up to the top level. Once there they were in smaller corridors finished only as much as required by utility. The lighting was lower too. Dimmer than the dull yellow-to-orange Elgin was accustomed to, the light was reddish. He could feel his pupils dilating.

It was obvious that these corridors were among the first ever made. They were probably dug when Green Comet was first inhabited, or even by the advance crew that prepared it before the general population arrived. They were built well. Elgin had no problem with the engineering. But they had a rough and ready feeling to them, and the surfaces had unattended scrapes and gouges in them. These corridors were made when there was no time for the niceties.

They didn't prepare him for the observation bubble. The three of them arrived at a modest little door which Stanton opened, standing back to allow Elgin to go through first. It was even darker on the other side of the door, so it took a moment for Elgin to see where he was.

He gasped and recoiled when he saw the stars. It looked as if he had just flown out onto the surface of the comet and his instinct was to get back through the door to safety. His way was blocked though, by Buzzard and Stanton following him out, so he calmed down. "The bubble," said Buzzard. "Observation bubble. Stanton's bubble."

Elgin looked at Stanton, who nodded. "So," he said, his voice quivering with his racing heart, "you took what you learned here and applied it to the ball?"

"That's right. It took a while to work out the techniques, like building up the shell with vapor deposition, but once we had them it was just a matter of scaling them up."

Elgin could see that this was a scaled down version of the big ice sphere he was working on. It was as if they were inside a transparent ball that was half embedded in the surface of the comet. Its diameter was only a fraction of the flashball court, though. It was only about fifteen meters across. As his eyes continued to adjust, he could see starlight reflecting off the back wall, enough to give him a good sense of its size. Finally he got up the courage to look outward again.

It was beautiful. Now that he was no longer scared to death he was able to appreciate that. The ice shell of the bubble was flawlessly clear, perfectly transmitting the frigid fire of the distant stars. Elgin felt a swelling in his solar plexus, a powerful yearning for what he was seeing. He took it all in, marvelling at the jewel-like glitter of star clusters, noting how the dark shadows of dust clouds helped to define the limbs of the galaxy. Stanton just let him look. Even Buzzard was quiet. They knew from their own experiences that he was best off trying to absorb it on his own.

Finally Elgin drew a deep breath, a huge sigh that returned him to his surroundings as well as replenishing his oxygen. He felt as if he'd been holding his breath. He pulled his eyes away and looked at his companions, who he could now make out in the starlight. "This is fantastic," he said. "Thank you for bringing me here."

"My pleasure," said Stanton.

"My pleasure," said Buzzard. "Pleasure."

"We didn't just bring you here to look at the stars, though," said Stanton. "Look over there to the right."

Elgin did as he was told, but he couldn't see anything. He persisted, though, opening his gaze and trying to relax and let whatever it was resolve itself. He was about to give up when he suddenly realized that there was something he wasn't seeing. There was a small spot on the star field that had no stars. He knew what it was right away. "The other comet," he said.

"That's right," said Stanton, very pleased.

"Elgin knows," said Buzzard. "Elgin knows."

"How far away is it?"

"About a hundred thousand clicks," said Stanton. "Right?" he asked Buzzard.

"Effay," said Buzzard. "Effay."

"We're closing at around three meters per second right now. Over the next few years we'll be gradually reducing that to zero."

"That's when we'll be joining them? In a few years?"

"Yes. Just a little less than three years."

Elgin was staring at the spot, trying to draw out some details, but the best he could do was a faint glow. It could just as easily be his mind filling it in as something actually visible. "Should I be able to see it?" he asked. "I mean not just where it occludes the background stars, but light reflecting from it?"

"Good eye," said Stanton. "This far out, the Sun's not giving us much more light than any other star, so it's right on the edge of visibility. The sort of thing where it's better if you don't look directly at it."

"That's it exactly. It's frustrating. If I look right at it, it disappears."

"Here, watch this." Stanton pushed a button on a small device he had in his hand. After a few seconds a flashing light appeared in the tiny disk of the comet. It flashed a short pattern, then changed from white to red and flashed another pattern. It did the same thing for orange, yellow and green, then did white again, then stopped.

Buzzard laughed with joy and did two turns around the bubble before returning to Stanton's side. Stanton was grinning. Elgin said, "You've installed a light show over there?"

"There are people over there. We use the lights to monitor our progress."

"I should have known," said Elgin.

"I set this up in advance," said Stanton. "When they got my signal they turned on the lights."

"What about the patterns?" asked Elgin. "I got the colors for the four comets, but what did the patterns mean?"

"I don't know," said Stanton. "I left that up to them."

"Intervals," said Buzzard. "Time intervals. Times." They just looked at him and waited. "Times. Of the comets. Times of capture. Times of orbits. Periods."

Stanton and Elgin both nodded. "Did they tell you that?" asked the older man.

"No," said Buzzard. "It was just there. Just there." He wasn't insulted by the question.

"Of course it was," said Stanton. "Well, if everyone's seen enough, we should get back."

"Seen enough. Get back," said Buzzard, heading for the door.

Elgin hesitated and Stanton waited. Buzzard stopped and turned. "I'm coming," Elgin said. "I just want to take one last look." It was, after all, probably the most splendid thing he had ever seen.

"Take your time," said Stanton. "You can stay as long as you want. If we have to leave I'm sure you can find your way back."

"No, I'm coming," said Elgin, backing toward the door. There was something terribly compelling about the frosty glitter and the impossibly deep black.

Stanton took his arm and guided him through the door. "You can come back any time. It will always be there."

When the door closed Elgin was struck by how dull and prosaic the hallway looked in the dim red lighting. Then he laughed at himself.

"What?" asked Stanton.

"Nothing, really. I just noticed how boring it is in here compared to out there."

"So?"

"Well, boring? Living in a comet?"

Stanton laughed and Buzzard joined in. "Come to think of it," he said, "I've become blasé about it too."

"Me too," said Buzzard. "Blasé." They all laughed as they headed back down to the lower levels, where people were going about their business as if it were the most natural thing in the world.

Stanton and Buzzard went back to the shop and Elgin headed for the ball to check in on Van and Laika. He found them there with a third person. As he approached, Elgin could see that she was an older woman, about Stanton's age he guessed, very attractive but hard looking somehow. She was talking to his two assistants and when they spotted him coming they quickly pointed him out to her. She turned and Elgin could see that she was indeed very good looking, but her features were marred by a dour expression and her eyes were sharp and probing.

"Where have you been?" she asked.

"This is Galatea," said Laika.

"The finisher," added Van.

"We were trying to tell her . . ."

"But she wanted to see you."

"Well," said Galatea, "where were you?"

Elgin could tell that it would be best to just get to the point and forget about the social preamble. "Stanton took me to the bubble. Buzzard came to."

"Ah, showing you the sights, eh? Maybe showing off, too?"

"More of the former I think."

"Yes. Stanton the humble. That's our Stanton." She got momentarily lost in her thoughts, but not for long. "So, he's letting you practice on this, eh?" She swung her chin to indicate the ball.

"Well, I don't know if it's . . ."

"Using his ball rather than risk something vital."

"Well . . ."

"And then he'll know if he can take off the training wheels, eh?"

Elgin stopped trying to respond. What she was saying was quite blunt, but it was uncomfortably close to what he was thinking himself. He decided to let her carry on until she finished what she had to say, then to play it by ear from there.

She told him how it would be. She would be in personally on the two installation days to do the finishing on the joints between the tubes and the ball. In the meantime she would bring a crew in to refinish the shell. "It's a mess," she said. "A complete mess." They couldn't see anything wrong with it, but she was disgusted. "People have been touching it."

Elgin was about to point out that having people touch it was inevitable, even desirable, but he caught himself in time. Galatea went on for a short while longer before she announced that she had work to do and couldn't hang around listening to their idle chatter any more. They watched her fly to the entrance, shaking her head and muttering. She stopped there and closely examined some flaw before she went out and flew away.

Elgin imagined he could still feel her disapproval echoing out of the corridor as she went. He was glad that Stanton had warned him, but the actual experience was still breathtaking. "So that's Gal . . ." he tried, forgetting the rest of her name.

"Galatea," Van and Laika harmonized.

"Galatea." Elgin couldn't think of anything else to say.

"She's okay once you get to know her," offered Laika.

"Yeah," said Van. "She's nice once you get past that. She was just nervous, meeting you for the

first time.”

“She was nervous?” Elgin had some difficulty imagining that Galatea could have been as nervous as he was. He filed it for later and got the first daily report from his assistants. Satisfied that all was well, he told them to come back in the morning, and set out for his last meeting of the day. It was quite a relief to meet the ferry crew. There was no drama there. They were refreshingly laconic, to the point of phlegmatic. “Let us know when it's ready,” they said, “and we'll move it.”

On that happy note, Elgin called it a day.

Chapter Twenty-One – Elgin Meets Frances

It all went like clockwork. They had the first strut fabricated in ten days and installed two days later. Van and Laika fought and quibbled and worked together as a well coordinated team. The fabricators were proud and pleased with their work. The ferry crew moved it efficiently and with little fuss, accompanied by a large crowd of onlookers. It was like a parade and a picnic and a midway all at once.

Even Galatea was happy, so far as that word could be applied to her. She had the sphere polished to maximum clarity and she was able to buff-in the joint on the strut, even though it had a gap, “of at least five millimetres,” on one side.

The second strut took only a week to fabricate, since they learned what they needed to know on the first one. Another one day carnival got it moved on site, and this time the assemblers were able to point out to Galatea that there was no gap to speak of before they welded it on. She scowled and muttered and then subjected their welds to even closer scrutiny. They took her criticism quietly and left smiling as she set to polishing furiously. They knew the work was good and they knew that she was as satisfied as she ever would be.

By the time they were done, twenty days had passed and the ball had been available for use on all but two of them. It looked good. It was just as Elgin imagined it, the lines flowing smoothly. Everyone had good reason to be proud of their work.

The next day they had a ceremony for the re-opening of the ball. It lasted all afternoon and was followed in the evening by a flashball game. After weeks of practice this would be Elgin's first official game against serious competition. It was not a memorable game for him.

Everyone was still better than him. He was behind at every turn. He couldn't keep up to the pace of the game and found himself futilely chasing what he couldn't catch. He couldn't compensate for it by anticipating what they would do because they were also ahead of him mentally. He found himself out of position whenever he tried to match the speed of the other players, and then they would play right through the opening. By halftime he was exhausted, frustrated and embarrassed.

During the break his teammates tried to encourage him, but he couldn't even look at them. He was letting them down and he couldn't bear it. Even Buzzard couldn't cajole him out of it. Finally, what he dreaded most, Captain Rita came over to talk to him. He was sure she was going to tell him to sit out the second half.

“You'd better pull me, coach,” he said, hoping to at least make it easier for her. “I'm obviously out of my league here.”

“Is that what you want?” she asked.

That set him back. He spoke hesitantly, unsure now. “Well, I'm sure not helping the team.”

“That's not what I asked you,” she said, not about to let him duck the question. “I want to know if you're ready to quit.”

That was hard. This wasn't sympathy, but another test. Would he quit on his team to escape the pain of this situation? Resolve rose instinctively in him. She had exposed his true nature and he knew he had to pick up the burden and carry it, no matter how ineptly. “No, coach,” he said, clamping his teeth to keep the quiver out of his voice. “I won't quit on you.”

“That's what I wanted to hear,” she said. “Now listen.” She told him what he was doing wrong, which wasn't easy for him. Still, it was more useful than what he already knew, which was what was going wrong. She also told him what he could do to improve. “You're not as good as the rest of the players. You can't compete at their level yet. I want you to figure out what you're capable of and play

within it.”

The second half was better than the first, but it still wasn't great. Elgin thought about what Rita told him and he tried to determine the limits of his ability. He decided to visualize the volume of space within which he could be effective. As he flew around the court he imagined a bubble that he knew he could defend. That helped him play a better positional game, instead of lunging about after the ball and other players.

His teammates saw the change and quickly adjusted. Now they knew that they could count on him controlling his area and were able to play and plan accordingly. Of course the opposing team also learned and adapted as well. Elgin still didn't have much of an effect on the course of the game or its outcome. He still wasn't much of an asset to his team, but at least now he wasn't so much of a liability. And by knowing what he could do and doing it exceedingly well, he took one option away from the other team. They soon learned that there was one path they couldn't take, one sphere of space that they couldn't play through.

The Harriers lost the game but not by as much as they could have. Afterwards, in the room, Elgin's fellow players congratulated him and clapped him on the back. It embarrassed him because he knew how little he contributed, but it made him feel as if he belonged. He was now really a Harrier. When Buzzard came over he could tell by his big, grinning face that he felt the same way. Both of them chattered excitedly as they flew with the teams for after-game refreshments at a café in the Square. Members of the other team congratulated them, knowing they were both beginners, especially Elgin since everyone knew he was a new waker. “You're a natural flyer,” they told him. “Stick with it. You'll be glad you did.”

It took Elgin a few hours to get to sleep that night. The excitement, not only of the completion of the project, but probably more importantly the flashball game, kept his brain buzzing. When he finally did drop off it was into strange, vivid dreams. He was playing flashball, but he was out among the stars and the ball was ice, a hundred meters across.

Things got back to normal at work the next day. He and Buzzard got into their routine and their days became a series of tasks and events with only minor variations. By day they would check the work of the pencil pool and the evenings were usually taken up by flashball, either practice or games.

Stanton congratulated him again on his project. “It looks like you're an engineer after all,” he said with a grin and a wink. It was one of the most beautiful things Elgin had ever heard. What Stanton said next was another. “Rita tells me you'll make a fine flashball player too.”

“She said that?”

“Yes.”

“She said I'm a fine player?”

Stanton chuckled. “‘One day,’ she said. She told me that you're slow and clumsy now, but one day you'll be fine.”

“Oh.” Elgin felt silly, but it didn't last. His captain's vote of confidence buoyed him up. “All the credit goes to her,” he said. “She straightened me out and told me what to do.”

“That's funny,” said Stanton. “She said the same thing. She said she gave you a pep talk but you're the one who went out there and did it.”

Elgin began to protest, but cut it off. As humble as he felt about his abilities, it still felt churlish to argue with someone being so generous. “She's a very good captain, isn't she?”

“One of the best. Now you'd better get back to work.” Elgin turned for the door and Stanton turned to his desk. “Oh wait,” he said, “there was one more thing.” Elgin stopped and waited at the entrance. “I have a planning meeting this afternoon but I can't make it. I'd like you to go in my place.”

“Me? I don't know anything about that.”

"Then here's your chance to learn. You won't have to talk. I just need you to observe and tell me anything I need to know."

"Okay boss." Elgin headed for the table, where Buzzard was deep in his work.

"I'll let you know when it's time to go," said Stanton from the doorway before he went back to work too.

Elgin wondered for a while what going to a planning meeting might entail, but he soon forgot about it as he became immersed in his work. At noon he and Buzzard went for lunch at the same café the teams had used after the game. They reminisced about it while they ate a passable soup and sandwich, then went back to work.

He was just handing some papers to Buzzard when Stanton popped his head into the room and told him to finish up and get ready to go. He had nothing to finish up so he went and freshened up, then presented himself in Stanton's doorway. "Ready to go boss," he said. "How do I get there?"

"It's easy to find," said Stanton. "It's right on the Square. It's on this side, the green side, only it's closer to the red end where we came in the first time." He grinned. "Do you remember?"

Elgin laughed. "I think so," he joked. "So I use the other corridor? Like the one we use to get here only on the other side of the big central entrance?"

"That's right. And the planning meetings are held in a room about as far down that corridor as we are down here. It's really obvious once you're there, and there's always a sign set up on meeting days."

Stanton was right, it was easy to find. It didn't take long to get there, being no more than a few hundred meters all together. It seemed a bit longer because his mind was racing, but he got there in less than five minutes. Since he'd gone early so as not to be late, he was there in plenty of time.

There was only one other person there when he arrived. It was another young man, perhaps a few years older than Elgin. He didn't catch the name when they introduced themselves. His mind was preoccupied with uncertainty and anticipation.

"So, you work with Stanton?" the young man asked, making polite conversation.

"Yes, and Buzzard," Elgin replied, his eyes trying to take in every detail of the room.

"And Stanton sent you here to observe?"

"Yes." Elgin remembered his manners and focused on his companion. "He said I could just watch," he said, "but I'm still nervous."

"I know what you mean. It wasn't that long ago that I was in your place." He shrugged. "I can't tell you not to be nervous. It doesn't work that way, does it?" Elgin shook his head. "But I can tell you that you don't need to be. We're all pretty easy-going and nothing serious happens here."

His host pointed out the place where Stanton usually stood, then told him, "If you just stick with me I'll introduce you to everybody as they arrive." There were six more people making up the planning board and Elgin managed to forget the names of most of them as soon as he heard them. Luckily he could find their names and anything else he needed to know on the network, so for now he could concentrate on them.

One person stood out so much that Elgin couldn't help but remember the name. Winston was the senior member of the board, being about twice Elgin's age. He had a commanding presence and an arresting appearance. It was possible to say he looked like a bullfrog without being insulting. He had a big head with a large, wide mouth. His eyes bulged and his voice was a deep, powerful croak. As he shook Elgin's hand it was obvious that he was assessing and categorizing.

"Let's get started, shall we?" said Winston.

"But we're not all here yet," said Elgin's guide.

"She'll get here when she gets here. We can't keep delaying these meetings to suit her schedule."

"But couldn't we wait just a minute? It's not that late."

"She knows when we start. She can learn to be on time."

"Come on, Winston. She's never very late."

Winston was about to reply when Elgin heard the most beautiful music. But it wasn't music playing. No real music could ever sound this good. It was someone speaking. It was a woman's voice and it was saying, "Thank you Nigel, but Winston's right. I should learn to be on time."

Elgin looked and it was as if a golden light had entered the room. She looked like the idea of woman, not just the reality. Her proportions, her parts, the way she carried herself created the impression that she was representing that idea, not just coming into the room. Her fur was a rich golden brown. Her eyes were also golden. Even her tapetums reflected gold.

She spoke again and it was the rightest thing he had ever heard. "I'm sorry I'm late everyone," she said, and it sounded to him like all the tones of a perfect symphony. It tasted like iceberries.

"This is Frances," said his host, whose name he now remembered was Nigel. "Frances," he called, "come and meet Stanton's representative. This is Elgin."

"I'm pleased to meet you Elgin," she said, taking his hand. She looked directly into his eyes and he got the feeling that she really was pleased to meet him. He must have said something, but he wasn't aware of it. She went and sat down next to Winston, and he appeared mollified when she put her hand on his arm and leaned in to apologize.

The meeting got underway and carried on for a couple of hours, but Elgin couldn't say what they talked about. It was a good thing he wasn't expected to contribute because his mind was empty. Stanton would have to read the minutes to find out what went on. Elgin was aware only of her golden light and the music, the rightness of her voice. When she stopped and someone else spoke, all he felt was a restless impatience for the return of beauty.

Eventually a slow transition took place. Instead of hearing music overwhelm her words when she spoke, he began to hear her voice accompanied by the music. Then he was able to hear her talking and the music became the background. The beauty was still there but now he was no longer lost in it. He could hear what she was saying. She was talking about the large, long distance corridors they were planning, mainly for transportation and future growth. "Our engineers could calculate what radius the corridors should curve on to match the gravity of the comet. If we get it right then traffic, by going the right speed, could be effectively in orbit around the center of the comet and not need to continually correct its flight path." It sounded reasonable to Elgin. In fact he thought it sounded brilliant. Most importantly it sounded right. The tones were pure and the music was sweet, but it screeched to a halt when someone else spoke.

It was Winston. He was saying, "This is a nice idea, but it's quite fanciful, isn't it? It's more difficult, not to mention the added costs. No, I think we should go with straight corridors, as we've always done." Elgin could picture him saying, "Harrumph!"

The change from beauty to ugliness jarred Elgin so much that he blurted, "She's right!" In the oddly echoing silence that followed, he tried to shrink back into obscurity. Winston was staring, no, glaring at him, his large mouth open in shock. There was a quiet wave of tittering around the table. Worst, though, was seeing Frances smiling at him. He felt as if his face was swelling and he knew he was blushing copiously. He thought he must look a complete fool. He knew he was right. He knew she was right. But when would he ever learn to say it tactfully?

The man who'd helped him earlier, Nigel, suggested that they should present this idea to engineering for analysis. Once they had some numbers to work with they could discuss it at a future meeting. His idea was quickly adopted and they moved on with relief. Soon after that, the meeting concluded and Elgin rushed out of there. Frances looked as if she wanted to talk to him, so he fled before that could happen.

Elgin wished he could forget about it. He hoped he would never have to go back there, never have to face any of those people again, but that wasn't up to him either. When Stanton listened to his report of the meeting he said, "Is that all that happened?" and Elgin had to tell the whole story.

Stanton said, "So, after Frances got there you, what, you didn't hear what anyone said for a while?"

Elgin was blushing again. "Yes," he said.

Stanton nodded. "She is an attractive woman," he said, "but I can't say she's ever done that to me."

"But what she said about the curving corridors, that was right." Elgin forgot about his personal discomfort. "I could tell that. She was right."

"And you're sure that's not just because she's so gorgeous?"

"No, I mean, yes, I'm sure. I can tell the difference."

"I'll take that into account when we get their request," said Stanton, "but we'll still have to treat it like any other." He smiled. "And you can do the proposal." His smile widened. "Right. You can start today. Take as long as you need. Then give it to Buzzard."

Elgin liked that. He was looking forward to burying himself in work and forgetting this embarrassing day. But it wasn't going to be that easy.

"And you can present it at the next planning meeting."

Elgin sighed. Yet another test. But it was a month before that would happen. He had the plans for the curving corridors done in one day but he kept them back so he could make sure they were perfect. Even so, when he gave them to Buzzard a day later he was still nervous and uncertain. He was doing it for Frances and that made him want to do it perfectly, even if she did think he was a fool.

He hovered. When Buzzard glowered at him he flew over to the galley, but before he knew it he was hovering again. He stuck a cup of coffee to the table for Buzzard and ended up reading over his shoulder. That was when he was banished from the shop and told not to come back until he was called. He left the room but he didn't go anywhere. He waited in the hallway, doing the microgravity equivalent of pacing.

Finally he was invited back in. Buzzard told him it was all done, all good and Stanton was looking it over. A few minutes later he was in the office getting Stanton's assessment. His boss told him that it was a viable plan but that he'd have to sell it right, especially to Winston. "Emphasize that it's not much more difficult to do it this way, and well worth the benefits. A smooth, continuous curve means no angled joints between straight sections. And people will appreciate the ease of use for years to come."

"That sounds good," said Elgin. "Couldn't you tell them?"

"No," said Stanton. "This is your baby."

He and Buzzard checked a lot of work that month, and they played a lot of flashball. The work became routine, repetitive and predictable, but never boring. The scale and novelty of it, the excitement of being involved in joining two huge comets made boredom an impossibility. Flashball also became more routine as they got more experience. It got so they knew what they had to do without being told. They inched their way toward the level of competence enjoyed effortlessly by the veterans on the team. Most gratifying to Rita was how Elgin's sphere steadily grew. She watched as he mastered one level and moved up to the next, always working within what he was capable of, but always pushing himself to improve.

He needed to have the same strength of character to take himself to the planning meeting. He imagined flying in there and seeing everyone looking at him. He repeatedly rehearsed the dismissive disdain Winston would show his presentation. But worst was the combination of amusement, pity and

disappointment he knew he would see in the face of Frances. To avoid being the center of attention he decided to arrive early again. Like last time, there was one other person there already, so he and Nigel made polite conversation while they waited. Unlike last time, Frances arrived a few minutes early.

She greeted them saying, "I didn't want to be scolded by Winston again." Everyone laughed, even Elgin, though he did it with some effort. She tried to engage with him but he wouldn't meet her eyes. Any distraction was sufficient excuse for him to avoid looking at her, and Winston's arrival was actually a relief.

He was the last one and Frances greeted him with, "At last. We were beginning to wonder if you remembered what time the meeting started."

That raised a round of laughter, but none of it was cruel. It was meant to include Winston, not to single him out. He tried to be aloof, even to look miffed. Once again Elgin expected him to say, "Harrumph!" But he couldn't do it. That was a talent Frances had. She could make people feel special by her gentle, easy ways.

The meeting got underway and progressed smoothly. Once again Elgin was strictly an observer. Stanton hadn't given him any issues to raise and there weren't any reports to read. He just had to stand there listening and observing, waiting anxiously for the end of the meeting when he would give his presentation on the curved corridors. He was nervous and distracted, but this time he was able to follow what was going on even when she was speaking. At least this time he would be able to report to Stanton.

Finally everything was done and it was his turn. He took the lessons learned in flashball and made his presentation simple and clear. He knew he didn't have the persuasive powers of an orator so he concentrated on clearly conveying a few easily understood facts. Toward the end of his talk he had a visual presentation of how the curving corridors might be used. He had no talent in that area, but Buzzard "knew a guy" and it actually looked pretty good.

He followed Stanton's advice and concentrated on the practical aspects of it and by the time he was done he had a sense that they were with him. Even Winston was nodding and he wasn't wearing his harrumph face. They had a quick vote and decided to send it back to engineering for preliminary work. They would look at it again when a more comprehensive plan was ready.

Everyone came up to him afterward and congratulated him. They praised the directness and simplicity of his talk. "Even I could follow it for a change," they laughed. They hoped that future submissions from engineering could be as clear and, "not so full of numbers." Elgin was relieved and happy, so he was still smiling when Frances appeared in front of him. At least if you're going to be stuck with an expression frozen on your face, he thought, a smile is not bad.

She touched his arm and thanked him. "It was just the way I imagined it," she said. "How did you know what I was thinking?"

"Oh," he said, "uh." He wrestled the stupid smile off his face and forced himself to speak. "It's not that hard," he said. "Once you have the numbers it pretty well shows you what's possible."

"I think you're being too modest," she said. "There are a lot of ways to get that across but you picked the one that was in my mind."

He was blushing again. "Well, I just kept in mind what you said when you first brought it up." She was looking right in his eyes. Somehow he knew she really cared what he thought, and that she would know if he tried to gloss it over. "While I was working I kept your description right there, to compare to the plan as I went along. I could tell when it was right or not."

"Stanton has told me about that," she said. "Your talent for knowing when things are right, I mean."

"You've talked to Stanton?"

"Oh yes, we talk all the time. We're friends."

"I mean about me? You've talked to Stanton about me?"

She smiled and he felt as if his mother was stroking his hair. She told him, "Of course we talked about you. He was sending you here, so naturally I was curious," Then she said something that changed his life. "And he's proud of you, so he naturally wants to brag."

"He brags about me?" Elgin had thought he was barely scraping by. That he was lucky to have passed the tests. Learning that Stanton was proud of him changed that.

"Yes he does. He says you'll probably end up being as much use to him as Buzzard. And that's saying a lot because I think Buzzard is like a son to him."

That made Elgin feel good. He didn't feel like the new guy any more. Now he felt like part of the team. "Almost as good as Buzzard," he mused.

"He wasn't really comparing you," she said. "You have different talents that he combines to make you both better." She searched his face to be sure she hadn't inadvertently made things worse. She liked him and she also valued Stanton's opinion of him. She hoped they could be friends.

Something changed though, and Elgin went back to feeling uncomfortable and awkward. He wanted to leave and he did as soon as he could manage it. As he hastily bustled out of there, he didn't see Frances' hurt and disappointment. He only wanted to stop wasting her time so she could get on with more important things.

Chapter Twenty-Two – They Become Friends

“**You did** what?” Stanton was shocked and incredulous.

“Well, I . . .”

“You were talking to Frances, a very beautiful woman, and you ran away?”

“I didn’t . . .”

“Why?”

“Well . . .” Elgin didn’t know what to say. “Why what?”

“Why did you leave?”

Elgin shrugged with his wings, their points rising along with his shoulders. He didn’t know if he could put it into words, but surely Stanton must understand. Even in a classless society like Green Comet there were some things a person had to accept. A woman like Frances could go anywhere, be with anyone. An ordinary engineer shouldn’t even think about wasting her time.

“Wasting her time? Didn’t you tell me she came over to you?”

“Well, yes, but . . .”

“Yes?”

“She was just being polite. Thanking me for drawing up the plans for her.”

“Plans which were exactly what she had in mind.”

Elgin jumped. “How did you know she said that?”

“She mentioned it when she called me.”

“She called you?”

“Yes,” said Stanton. “We talk all the time. We’re old friends.”

“She talked about me?” Elgin tensed up.

“She did. I think she really wanted to find out if there was any mental illness in your family,” Stanton said with a penetrating stare, “but she talked about how your plans seemed to come right out of her head.”

“I explained that to her.”

“I know. She said. She also said you’re nice.”

“Nice? She thinks I’m nice?” Elgin’s face mingled awe with disbelief.

“I don’t get it either,” Stanton said with rough humor. “Look, tell me again. What happens when you see her?”

So Elgin explained about the golden glow and the aura of clear light and the music. It was easy to do. He could have done it all day.

“Okay,” said Stanton, stopping him, “I get it. She is the most perfect woman you’ve ever met. So, how was it when she came up to talk to you?”

“It was weird,” said Elgin. “It was wonderful. I couldn’t believe it.” His eyes focused on the memory. “I could have spent hours talking to her.”

“Ah,” said Stanton, “so why didn’t you?”

“I told you,” said Elgin. “I had to get out of there so she could get back to more important things.”

“Right,” said Stanton. “Frances will be relieved to hear that. She was afraid it might have been something she did.”

“Oh, no!” Elgin cried.

“Oh, yes.”

“But that’s impossible. It could never be something she did.” Elgin couldn’t imagine a world

where that would be so.

"How is she supposed to know that?" Stanton asked gently.

Elgin couldn't answer. This was completely new territory for him. His shoulders slumped, along with his wings. "What should I do?" he asked.

Stanton shook his head. "How is it," he mused, "that you can tell when things are right or wrong, but you can't hear what your own heart is telling you?"

"I don't know," said Elgin, his eyes on the floor.

Stanton took pity on him. "You'd better get back to work. We'll talk more when the request comes in for her corridors."

Elgin had almost a week where he could concentrate on work and flashball and not have to think about the hard stuff. Not that he could completely forget about it. Images and snippets kept coming to him at random. Things she said. Stanton's questions. Worst was his chagrin for making Frances think she did something wrong. That one made him wince every time.

When the request came in Stanton called him into the office so they could discuss it. It was comprehensive. Not only did it have the long curving corridors, it also had some local branches for existing and planned development. They weren't expected to build it all now but their plans would be open for later additions. They would be laying down the pattern for future expansion.

"She's really thought about this, hasn't she?" said Elgin.

"She has," said Stanton. "This is normal for her, though. She's a careful thinker. When she puts something forward you can be sure that she's looked at it very closely."

"She's described it really well, too," Elgin said. "I can see it all and I can already see how to get started on it."

"That's Frances," said Stanton with a smile. "If she would only come work for me I could get rid of half of you slackers."

"Hey!" said Elgin, but he took it just the way Stanton meant it.

"Okay," Stanton said, "do you think you can do it from this?" When Elgin confirmed that, he added, "Carve off some parts for the pencil pool. You might as well get used to farming out your work."

"Sure," said Elgin. This was a new sensation for him: assigning work to Stanton's pencil pool. He was already looking forward to the parts coming back for his inspection. He wondered how well it would survive the translation.

He soon discovered one of the frustrations of having other people do the work. It takes longer than if you do it yourself. He meted out what he thought was a reasonable portion, and kept the majority for himself. He was still finished his part before he got it all back. He gave it a couple of days and then he went to talk to Stanton.

"This is the first thing you learn when you delegate," Stanton told him. "It's never as good."

"You're used to this?"

"From the pencil pool, yes. It's never a problem with Buzzard, or you for that matter. But once it gets the least bit anonymous you can't rely on them."

"But that's . . ." Elgin's mouth opened and closed a few times. "I mean, it's just," he groped for the right word, "unprofessional."

"I wouldn't put it quite like that," said Stanton. "They're all professionals and the work they hand in is more than adequate." He smiled dryly at Elgin. "The problem is that you have to get used to the fact that they might not care as much about your project as you do."

"What do I do, then?"

"Find something to keep you occupied, and try not to worry. It will be here in time, even if it's not as soon as it could be." Stanton had to smile at Elgin's expression. "I know you're frustrated, but

you have to get used to it.”

It did eventually all come in on time, and the work was good, if not inspired. Elgin checked it, touching up where required, and passed it on to Buzzard. Once Stanton okayed it they had what they needed for a presentation. Naturally, Stanton assigned it to Elgin. “We’re going to keep doing this until you get it right,” he said, and Elgin knew he wasn’t talking about the presentation. He agreed with his boss, although not completely. He still didn’t think he had a chance with a woman like Frances, but he knew he had to find a way to handle it better.

They discussed the presentation, then they got down to the important stuff. Elgin knew he would have to talk to Frances and he was looking for some advice. He said, “What should I do, boss?”

“I obviously can’t tell you what to do,” said Stanton, “but I’ll give you this little bit of advice. Be natural. Let it take its own course. And keep it light.”

“You mean just wing it and hope for the best?”

“Yes. And don’t take it so seriously.” Stanton punched Elgin’s shoulder. “It’s not as bad as you think it is. Just keep it light and let it happen.”

Elgin knew it was good advice and he tried to take it to heart. For the next couple of days he practised being relaxed and nonchalant, repeatedly reminding himself to keep it light.

When the day finally came he was surprisingly calm. He’d heard it was the same for people who knew they were about to die, but he didn’t like the analogy. He stayed at the work table all day with Buzzard, doing his job and keeping his mind occupied. He didn’t worry any more about speaking in front of people. Now that he’d done it he found that it was like anything else. You just had to make sure you were properly prepared and then rely on the good will of your audience. He just needed to occupy his mind so it didn’t obsess about what he’d be doing afterward. Talking to an audience of many didn’t bother him, but he wasn’t so sure about the audience of one.

The presentation went well again. His clear language and minimal use of numbers won them over, and Buzzard’s guy made another excellent animation. Before he knew it he was done, it was approved and the meeting was breaking up. Now came the hard part.

Frances was picking up her things and saying her goodbyes. He moved toward her and waited for her to finish up, hoping to catch her eye. She noticed and came around the table toward him. “Keeping it light,” he said to himself. “Keeping it light.”

As she approached him her beauty seemed to illuminate her way. It radiated from her like light. It wasn’t just in the way she looked, but also in how she wore it and carried it. It was like a tangible field that occupied the space around her and he couldn’t believe how lucky he was to be enveloped in it.

He knew he was smiling but he had no idea what it looked like. Now he didn’t know what to do with his hands, so he clasped them in front of him. He thought that looked silly so he clasped them behind his back. That was even sillier so he let them hang by his sides, only in microgravity your arms don’t hang by your sides. So he ended up standing there with his elbows akimbo and probably a stupid grin on his face. “Keeping it light,” he chanted.

What she saw as she approached him was a man who was unconsciously graceful. She could tell that he was a little nervous but that just made her think he was sweet. She had seen her share of arrogance and vanity in men who had far less to be vain about than Elgin. His obviously real sense of humility was a welcome change. She knew he was a natural leader, even if he didn’t. She could tell that he was used to responsibility, and she correctly guessed that people had always instinctively turned to him, expecting him to take charge.

It didn’t hurt that he was good looking. Along with his graceful nature he had a trim, athletic build. It was covered by and enhanced by glossy brown fur with reddish highlights, and his eyes were a rich, glowing brown. Most importantly, his eyes weren’t hiding anything. His face was open,

showing his feelings. She didn't get the sense that there were any deeper, ulterior motives lurking there. She had lived long enough to know that she had an effect on men, and she had experience with the results of that. Elgin's honest character was a welcome change.

Elgin had no idea the assessment was going on, or how he was faring in it. He was just watching her get closer, and when she said, "Hello," it was as if she had struck a perfect chord. It caused him to horripilate. He was still distracted by the wave of goosebumps transiting his body when she said, "I'm glad you waited," and stuck out her hand.

He spasmodically grabbed it and said, "Me too." Then he forgot to let go. He felt as if his mind was operating at about a tenth of its normal speed.

Frances took his hand in both of hers and held it while she said, "I feel as if I'm meeting you properly at last." When she let go so did he.

Now Elgin noticed that he was at ease. His nervousness and apprehension were gone. He couldn't even remember what it felt like just a moment ago. He smiled at her, a natural smile, and said, "Well, I'm happy to meet you." Her face, already radiant, went to a new level, and Elgin swore to himself that he would move the heavens to keep it there as much as possible.

They fell into a comfortable chat, almost as if they had always been friends. They talked about their shared interest in the project. They discussed Stanton and Buzzard, who they agreed were both stalwart characters. They decided to go to the café in the Square, and the conversation continued. They talked for hours and neither one wanted it to end. Very soon they both knew it never would.

Chapter Twenty-Three – Shimmer's Idea

That was it. Elgin, in a mystery to him, found that he could be in her light listening to her music as much as he wanted. They had a date after work. She was going to come and watch him play flashball. And she wanted to come to the café after the game. If he hadn't heard the pure tones in her words telling him it was right, he might not have believed it.

At the café last night, in the hours of talk and laughter, he'd caught her looking at him in a way that made him feel both shy and sure. The look on her face made him think of a girl he played with at the beach one summer. She was searching for pretty shells and found the biggest, most perfect nautilus shell he'd ever seen. Her face glowed with the same delight, and he was amazed that Frances looked at him that way. Like she had just found something precious.

He couldn't account for it, but he wasn't bothering to figure it out. Some gifts you just have to accept without knowing what you did to deserve it. He knew Frances was a smart woman and she seemed to think this was a good idea, so that was good enough for him.

"Elgin?" It was Buzzard. "Elgin?"

Elgin came back to himself. "What?"

"I'm done. All done. All finished." Buzzard indicated the empty table in front of him. "Have you got more? I need more."

"Oh!" said Elgin, looking sheepishly at the big stack at his elbow. "Coming right up." He dug in and began supplying Buzzard again.

His friend was grinning at him. "Elgin's got a girlfriend," he teased. "Girlfriend."

However Elgin might have wanted to reply to that, he couldn't help grinning right back. He was able to say, "It's not official or anything. We just went to the café."

"I know. They were there," said Buzzard. "Some of the team. Saw you there."

"Oh," said Elgin, blushing under his fur. Now the whole team would know. "But we were just talking," he said.

"They said you were lovey-dovey. Lovey-dovey."

Elgin was rescued when Stanton summoned him to the office. Buzzard's great big grin followed him across the room, and when he went through the door he was greeted by another one. "Oh, for goodness sake," he said, "does everybody know?"

"I can't vouch for everybody," said Stanton, "but I haven't met anyone yet who doesn't. The comet is a small town, Elgin. Word travels fast."

"I guess I'll just have to get used to big, sappy grins everywhere I go, then."

"I guess so. But enough of that. Tell me how it went."

Elgin recounted their evening, his voice betraying his amazement that he was talking about himself and not some other lucky guy. He obviously wanted to describe every little thing that Frances had said and done, but much of it sounded banal when put into words.

"That's good," said Stanton, mercifully stopping him, "that's fine. I knew you two would be good for each other." As Elgin was reacting to the implications of that statement, Stanton added, "But I was wondering how the presentation went. Do we have a project?"

Once again Elgin's blush rose up under his fur, but then his boss gave him a smile and a wink, so it was all right. "Yes," he said, "the whole thing was approved. I can get started on it any time."

Stanton shook his head. "I don't think I'll start you on anything new today. Maybe in a few days."

"Why not? I can handle it."

"Not for a while," Stanton said with finality. "I've seen you at work this morning. I don't think you'll make much of a start on a new project if you're staring off into space all the time."

"I wasn't," Elgin started. "Okay, maybe I was. But I can do it. I just need to bear down."

"I know you could do it. But I think you should have a day to enjoy your feelings, so just keep doing the routine stuff."

Elgin thought that was a nice gesture. It was really thoughtful. "Thank you," he said.

"You're welcome." Stanton clapped him on the shoulder. "I'm really happy for you, Elgin. And really happy for Frances, too." He added, "She's invited me to watch you play flashball. I hope that's okay."

Elgin was flattered and stimulated by the prospect of playing in front of his boss as well as Frances, but a bit anxious too. It made him realize that no one's opinion mattered to him more. Tonight's game was going to be special. "Of course it's okay," he said. "I'd like it if you came to every game."

"Good. That's settled." Stanton had wanted to go watch him play, but hadn't because he didn't want to put extra pressure on him, and because he wanted Elgin to have a part of his life that was independent. He was glad he could go now. "Why don't we all three go together, then Frances won't be left alone when you go into the dressing room."

"All four!" called Buzzard. "All four go together. All together."

"Okay Buzzard," Stanton called back, "all four." To Elgin he said, "Man, does he have good ears."

"That sounds good to me," said Elgin. He went back to work then. The rest of the day was a bit of a blur, but he didn't leave Buzzard without any work again. He always managed to come out of his daydreams in time and without needing to be prodded.

Elgin was improving as a flashball player. In the last few months he had become as good as many of the other players on the team, and better than some. Not that he would have believed it if someone tried to tell him that. As far as he was concerned, he was still the new guy relying on the competence of his teammates. Captain Rita had a different view. To her Elgin was a versatile, dependable player that she could put into almost any situation. So far he wasn't one of her talented ones, but if he kept progressing the way he was he soon would be. And for now she knew she could rely on him to fulfill the responsibilities she did give him.

Elgin looked out through the ice, checking out the crowd. It was a pretty good one, as they all seemed to be lately. People were catching on that the Harriers were one of the best teams this season, and the Falcons, their competition tonight, were up there too. He scanned the crowd, looking for Frances and Stanton, and found them right away. It wasn't hard. Her radiance caused the rest of them to fade into dull uniformity, and Stanton was caught in the glow. She beamed and waved and clapped her hands. Stanton nodded and gave a thumbs up. To Elgin it felt like an infusion of energy directly into his bloodstream.

This was Elgin's best game to date. It was one of those jumps where things come together to produce a quantum improvement. Plays that required focused effort last game were almost effortless now. Playing for Frances and Stanton gave him both inspiration and the energy to carry it out. Captain Rita saw the improvement and gave him some added responsibilities. This was what she had been waiting for.

His greatest asset for the game, other than his natural physical ability, was his exceptional geometric sense. It allowed him to have an instantaneous picture of the structure of the play at every moment, and an intuition for how it would change in the next few seconds. That was all the information he needed. His usual talent for knowing immediately whether something is right let him

almost instantly choose and make the best play available to him. Add in quick, accurate passes and he was Rita's perfect choice for one of the pivot positions, which usually got extra attention from the defence.

She used Buzzard differently. He didn't have Elgin's quickness, either physically or mentally, so she kept him out on the periphery where things happened more slowly. That gave his brain time to process the details of the play, and it gave his long, supple body the time and space it needed to maneuver. He developed a technique that allowed him to use his extraordinary physique to throw the ball faster than anyone else in the game, which was perfect because his position made his passes necessarily very long.

That made him very effective in his position, but it also allowed him to score points for style. While most of the scoring was in the successful formation and execution of patterns, there was a discretionary component. Since much of the ethic of the game was directed toward the enjoyment of the audience, there was always a place for stylish execution. When Buzzard relayed a pass, if conditions permitted, he took a trademark curving swoop that let him use his whole body and its long arm as a whip that drove the ball's speed up through yellow to a flash of white. He was a crowd favorite.

This was Buzzard's best game too. However he came to it, whether inspired by the presence of Stanton or by the performance of Elgin, his game also clicked up a notch. They made each other better, they made their teammates better and they made the team better. The Harriers won the game and they won it with style. The audience showed their appreciation for the beauty with a long round of applause. Members of both teams came up and congratulated Elgin and Buzzard as they made their way to the dressing room. Rita complimented them both personally as they flew out of the ball.

When they came out of the dressing room, Frances and Stanton were waiting near the lenticular opening in the strut. Stanton was smiling proudly at both of them, but mostly at Buzzard. He shook the young man's hand and gave him a hug, but Elgin was distracted by Frances throwing her arms around his neck. "That was exciting," she said, "and beautiful. I love the way the ball glows."

"It's speed related," said Elgin.

"The higher the speed, the brighter the glow, right?" When he nodded she asked, "But why does it get brighter after it leaves the hand? Shouldn't it be brightest right at release?"

"Yes. Most people don't think of that." But Frances would, of course. He hadn't known her long, but he already knew that she had an eye for the important point. "The ball has a timer. It delays peak brightness so it has that profile during its flight."

"Attack and decay," she mused. "Not an accurate representation, but more pleasing in its effect. I think it actually looks better this way than the real thing would."

"I think," ventured Elgin, "that it recalls the flight of a ball thrown in gravity. The arc."

She nodded enthusiastically. "That sounds right," she said. "It's certainly a good effect. Especially when Buzzard throws it. No one else gets it that bright. I thought I could hear a crack whenever it flashed white."

"I get that too," said Elgin. He was about to tell her of the experiments done with sensitive microphones that showed there was no sound, but then she was backing out of his arms.

"Buzzard!" she said, flying toward him. He and Stanton were looking at them, smiling indulgently at their cuddling. "That was amazing. How can you throw it so hard?" She threw her arms around his neck too, but only briefly before standing back to look in his face.

"Moment arm," said Buzzard, his face showing intense emotions. "I have a long moment arm." He was looking shy and nervous, but he also projected peace and happiness. Frances could have that effect on people. Elgin noticed it even affected his speech, making it smoother and less repetitive.

"Moment arm?" asked Frances, looking at Buzzard's long arms, then at Stanton.

Stanton laughed. "It's a physics thing," he said. "Basically, the same amount of torque will apply more force the longer the moment arm." They both laughed at the inadequacy of the explanation.

"Never mind," she said. "I get the idea. I'll look it up later." She patted Buzzard on the arm and then hooked her arm through Elgin's. "Let's go to the café," she said.

Elgin was right about the sappy grins. He and Frances weren't even being excessive in their attentions to each other, or so it seemed to him, and everyone still had that look on their faces. On the way to the Square and in the café, sappy grin after sappy grin. He finally just had to ignore it and have a wonderful time. That was easy in the company of Frances.

They didn't spend the whole time together. Other people wanted to talk to Frances too. Rita had a good, long talk with her. Elgin was standing with Stanton, watching them.

"What do you suppose they're talking about?" he asked.

"What do you think?" said Stanton. "Or who, more likely."

"I don't know," said Elgin. The two women looked at him and he waved. They waved back and then put their heads together again. They must be happy, he thought. They were smiling.

"Who do you think they would have to talk about?" asked Stanton.

"I don't . . ." Elgin began. Then he got it. "Me?"

"Who else?"

Elgin was dumbfounded. He had never once in his life imagined himself as the topic of conversation. Particularly among women. And now, here were the two most important women in his life apparently talking about him. He resisted the impulse to fly over and find out what they were saying. Instead he asked Stanton.

"I wouldn't know, but it doesn't look bad. Why don't you ask Frances later?"

He did that. More accurately, he started and stopped and stammered until Frances figured it out, and she told him. She said they were "comparing notes," and he couldn't get her to give him any more details. At least she confirmed that they were talking about him. So he knew that much, but he still didn't know what they said about him. In the end he decided to do the stoical thing and accept not knowing. His brave face melted her heart and she relented enough to tell him, "It was friendly talk, Elgin. Neither of us had anything bad to say." Then she kissed him.

His mind was still full of the night before when he got to work the next morning. They spent some time chatting and drinking coffee, reliving flashball plays and rehashing discussions before getting down to work. It took him a few minutes of looking before he registered what was on the piece of permapaper in front of him. When he did put it together he still couldn't absorb its meaning. His sense of right was satisfied because the plan was good, but it conflicted with his sense of reason. What was being proposed was so bizarre that he even doubted himself momentarily.

He checked the attribution on the submission, which showed that it hadn't been assigned by Stanton. That was a relief, anyway. The author had put it in on their own initiative. It was Shimmer, the unreliable one that Stanton tolerated for his occasional insights. The outlandish nature of the plan began to make a little more sense.

Still, he went over it again. Then again. It still came out right in spite of how wrong it seemed it must be. Finally he passed it over to Buzzard with the comment, "This one is weird," as he placed it on the good pile.

Buzzard nodded and carried on with the one he was doing. Elgin picked up another paper and tried to examine it, but he couldn't keep his mind off the last one so he wound up watching his partner, waiting for him to get to it. Buzzard felt himself being watched and it made him curious, so when he was done he picked up the latest addition instead of keeping to the normal rotation. It took him longer

to see what it was about, but when he did he was no less shocked than Elgin was. He looked up, his face a big question.

“Yes,” said Elgin, “it's right. But I can't believe it either.”

Buzzard frowned and bent over the paper. He worked hard at it, spending the rest of the morning sifting every detail of it. Finally he straightened his back and said, his voice uncertain, “All done. All ten.” He looked at Elgin and finished reluctantly, “All good.” Then he got up and took it into Stanton's office.

When he came back out they waited. It was time for lunch but neither of them wanted to leave. They didn't go back to work because if Shimmer's paper was good enough for Stanton then a lot of their current work would be made irrelevant. So they waited, drinking coffee and fidgeting.

When Stanton's door opened they drifted toward it. Stanton came out slowly, looking at the paper in his hand. It was plain that he was as confounded as they were. He said, “I can't find anything wrong with it.” He looked around the office, then threw the paper down and said, “Come on. We need to think about this.” As they went out he said to Elgin, “Give Frances a call. We can use her insight.”

They met in the Square and Frances suggested they go to the bubble. Elgin had told her it was about the joining when he called and the observation bubble seemed like a good place to think about that.

The view was still amazing, heightened by the intense feeling of exposure, but their reason for being there kept their focus close to home. They explained it to Frances in detail. She listened without interrupting and when they were done she zeroed in on the question they all had. It was the question all the residents of Green Comet would have. “You want to crash the comets together?”

They all answered at once, then deferred to Stanton as chief engineer talking to an influential member of the planning committee. “Not crashing, Frances. At one meter per second it will be more of a soft bump. That's like a very slow walking speed.”

“I know,” she said, “but everyone's first reaction will be crashing.”

That was true. It wasn't an abstract problem. They lived in one of the comets and the idea of colliding with another one would make everyone very nervous. It was right for Frances to assume the worst because everyone else would. All three of them had the same reaction even though they could read the plans and rationally see how low the risk should be.

She looked at Elgin and asked, “Is it right?” He nodded. She asked Buzzard, “It's good?” He nodded. “All good. All ten.” She looked at Stanton and he nodded too. “All right,” she said, “then it's just a matter of convincing everyone else.”

Stanton said, “You really think we should do it?”

She smiled at him. “I trust your judgement. If any one of you told me it would work, I would believe you. With all three of you in agreement I'm ready to move on to the execution phase.”

“Oh, we're nowhere near being ready for that,” cautioned Stanton. “We have a ton of calculations to do, and then a whole battery of simulations.”

“I know,” she said, laughing. “We won't do a thing until we're sure.” She said to Elgin, “When the time comes, do you think you could do another presentation with video?”

“Sure,” he said. “Buzzard knows a guy.”

“Good.” She turned to look outside. “Now show me. Tell me what it's going to look like.”

Chapter Twenty-Four – The Joining Debates

Buzzard's guy outdid himself. His simulation of the joining was his best piece of work yet. He was inspired by the grandiosity of the project and was glad Buzzard asked him to be involved in it. He found that his imagination was tested beyond anything he'd experienced before. He was stretched almost to the limit visualizing what was going to happen.

He had no shortage of material to work with, though. Buzzard applied his ample skill to analyzing every detail of it, and he supplied his guy with more numbers than he needed. He got Stanton to commission acoustic sampling of the contact zones, so he would be able to calculate the deformation of the surfaces. Every time new information came in he did it over, providing ever finer constraints on the video. The artist had been planning on a spectacular show with comet material blasting into space upon contact, but he was forbidden. They didn't want to alarm people, and Buzzard's numbers showed it simply wouldn't happen that way anyway.

Within a couple of weeks they had enough data for a first approximation. In two more weeks the video was ready. Frances arranged a special meeting of the planning committee for a viewing. Everyone went. Stanton and Buzzard accompanied Elgin, both to lend weight to his presentation and because they had a deep interest in the project. The only person who wasn't there was Buzzard's guy.

Frances introduced the topic as a new, more efficient way of joining the comets. She briefly outlined how much it would save in time and resources, and then handed off to Elgin. He expanded on the efficiency and savings, something they wanted to emphasize. He described the current plan, pointing out the waste involved in stopping and starting the comet, and the potential danger to the people working between them. Then he said, "We propose to let the comets do the work," and told them Shimmer's plan.

He paused momentarily then, but no one seemed to want to say anything so he carried on with the details. It would take hours instead of months or years. It would save a great deal of energy and nitrogen since they wouldn't need to use the thrusters as much. It would be safer since nobody would have to work between the comets.

"Speaking of safe." It was the young man, Nigel. Winston also nodded his head and croaked.

"Our preliminary calculations show that there is a negligible danger to the settlement."

"Negligible? Does that mean that there is a danger?"

"Yes. There is approximately one chance in ten thousand that there will be a breach in the integrity of our walls resulting in a significant loss of air."

"One in ten thousand?"

"Yes. Effay," said Elgin.

"Thank you," said Nigel. "I think you've given us an honest assessment." He looked around the table and everyone nodded. "We should be able to reach a decision based on this and the written report."

"We know it looks alarming at first glance," said Elgin, "but we've subjected it to stringent analysis and we all feel that it's not only more efficient, but safer too."

Winston spoke up. He wasn't wearing his harrumph face, but he had a carefully non-committal expression. "Do you all agree? Stanton?"

Stanton moved forward. "Yes, Winston. I can't find anything wrong with it, and I've tried, believe me." A chuckle went around the table. They all knew Stanton's reputation for exactitude. They wouldn't want anything less in their chief engineer.

"Thank you," said Winston. He glanced at his notes. "Bussard?"

Stanton, Elgin and Frances all said, “Buzzard,” together and everyone laughed. Stanton said, “His chosen name is Bussard, but we all call him Buzzard.” He held out his hand to beckon Buzzard forward. “I think he prefers it.”

“Buzzard,” said Buzzard. “Everyone calls me Buzzard now. I prefer it.”

Winston, who might have been the only waking person on the comet who didn't know that, said, “I'm sorry Buzzard. Do you agree with the plan?”

“Agree,” said Buzzard. “Good plan. All good. Better. Best plan.”

Heads were nodding. People were used to Buzzard's manner of speaking and Winston caught on right away. “Thank you very much, Buzzard.” He looked around before finishing. “I agree with Nigel. I think we have everything we need. Thank you, Elgin, for another excellent presentation. And Stanton, it's good to see you here again after so long. And I'm glad to have met you at last, Buzzard.” He straightened his papers, ready to close the meeting, but was arrested by a clear, golden chime.

Frances said, “Just a moment, Winston. I think we still have a treat in store for us.” She looked at Elgin. “Don't we?”

Elgin was growing accustomed to the effects of her presence and her voice, so he was able to respond right away. “Yes. Yes we do.” He addressed his whole audience. “We have a visual simulation of the joining.” He started it, speaking over the introductory frames. “The whole thing, from the moment of contact, will take over three hours. We've compressed it down to three minutes here, so please don't think it's really going to look this way,” He stopped speaking just as the two comets touched.

Even at this accelerated pace it wasn't terribly dramatic. At an apparent closing speed of sixty meters per second it was possible to see things happening that might not be visible at one meter per second. They could see the contact area growing as the two comets became embedded in each other. They could see a humped rumple line moving away from the point of contact on both comets. But the whole thing looked very controlled, even stately.

That was where the drama was. Not in terror but in the slow, steady precision with which these two huge, massive objects became one. Even three minutes is quite a long time. People were beginning to shuffle and look around toward the end, when things had slowed down so much that nothing seemed to be happening. Elgin let it run, driving home the sense that there was nothing to fear. When the speed indicator finally, agonizingly clicked down to zero he said, “That's it.” The view panned back, showing both comets, and simulated orbiting around them. It looked remarkably mundane.

Frances suppressed a giggle and said, “All we need is another, smaller one stuck on the end, and two big pieces of coal for eyes.” Everyone laughed. It did look like a snowman under construction. The spot showing where their settlement was, ninety degrees around their comet from the contact point, even looked a bit like the bottom button of his coat.

The meeting broke up in an atmosphere of good humor. Everyone seemed relaxed and Elgin felt that they would probably get the approval to go ahead. So as the four of them were headed for the Square and the café, he was surprised when Frances told him they weren't there yet. “I think they were all convinced,” she said, “but Winston takes his responsibility very seriously. I think he's going to recommend a debate followed by a general vote.”

He did. They scheduled the first debate for the next week and the second for the week after. They made the paper available on the network, along with an abstract and notated illustrations. The video was there for viewing, both the short one and a full length one. At Frances' suggestion they began showing the video in the Square. There was one big screen for the long version. They wanted to be sure that everyone knew that the slow, boring one was the accurate one. It was surrounded by smaller screens showing different angles, and arrays of evolving data. There was another cluster of

small screens dedicated to the three minute version.

The comments on the network were numerous, and at times very animated. There was so much interest that discussion forums sprang up spontaneously, but trying to judge the consensus from the comments and posts was futile. The balance was about even, but it might not match the actual vote later.

Both sides claimed that their way would be safer, but the con side had a much better angle on that. Letting the comets do the work might be safer for the people working there, but doing it manually was obviously safer for everyone. The pro camp had efficiency and saving precious resources and the assurances of their best engineers on its side. The other side had conservatism and fear.

The first debate didn't resolve the deadlock, although it did increase the participation in the discussions on the network. Elgin was afraid that they would want him to argue the pro side, since he was the one doing all the presentations lately. He was relieved when that burden was lifted by Frances. She admitted that she had some experience with public speaking, and since she was interested in the project and strongly in favor of it, she felt she should defend it. She grilled the three of them mercilessly, familiarizing herself with every detail, positive and negative.

It was two weeks of intense political involvement by a large majority of the population. They knew it was important. They knew it had consequences, not only for themselves but for the eighty percent presently in hibernation. There was no question that their decision was a proxy for the sleepers. It was made clear to everyone before they ever got to the comet that whoever was awake would form a quorum at any given time. Everyone was aware that their vote carried the weight of five.

The second debate was more closely followed than the first. Both sides, Frances speaking for and Winston against, used the results of the first debate to refine their arguments. Winston was good. He knew just what buttons to touch, mostly around uncertainty. There could be no guarantee that it would work. They could destroy both comets and annihilate themselves. To save a little time and resources? This time he actually did say, "Harrumph!"

Frances didn't quibble Winston's points. She knew there was no guarantee, but she didn't have to remind people of that. They all knew it. They were living in a comet, beyond the most distant of their Sun's planets and getting farther every second. They had safety measures and redundancies built into everything, but they all knew how precarious their situation was and they weren't going to demand guarantees. The people might be cautious and careful with their resources, but by nature they were confident and daring. She would appeal to their sense of adventure.

Elgin watched her talking to the people that day and fell a little more in love. She wasn't trying to convince them to take her point of view, nor to vote for her. She didn't care, at that moment, talking to the people, whether she won the debate. All she cared about then was encouraging them to do the thing that would most gladden them. She knew. Just as Elgin knew when something was right, she knew what people felt, what they most wanted and needed. In this case, by voting to bring the comets together in a beautiful choreography of engineering, she knew that they would be doing what was most natural for them. She wanted to encourage them to do what would make them feel best about themselves, and Elgin fell a little more in love.

He already knew that the joining wouldn't significantly decrease their safety. He had seen the numbers and done the math. Still, the music in her words seemed to make it even more true. That's why he found himself resenting Winston, who always seemed to be resisting them.

"How can he do that?" he asked her after the debate. All the arguments had been made and now it depended on how the people chose to vote. "How can he not see?" He was angry with Winston for so effectively expressing the opposition to their plan. He didn't like that he did it so well, that he was such a threat. Elgin also had to admit that what Winston said sounded right. His talent for knowing when something was right could see that, and the ambiguity disturbed him. Mostly, though, he felt

angry that Winston could oppose Frances when she was so obviously more right. How could he not see that?

“Winston is doing what's best for the comet,” said Frances. “He always does.”

“But he's not,” insisted Elgin. “What you said is best for the comet. If he wins, the people are going to lose. They're going to lose something grand.” He couldn't find the right words and his shoulders slumped.

She came close and snaked her arms under his wings to wrap them around his waist. “Don't worry,” she said. “They're not going to vote for caution, they're going to vote for daring and beautiful.”

“You're sure?”

“As sure as I can be,” she said, grinning up at him, “and that's pretty sure.”

He felt better about that, but he still couldn't see Winston as anything but a misguided adversary. “How can he do that when he's so obviously wrong?”

“But he's not wrong, Elgin.” She squeezed him. “Not everyone has your talent, you know.” She snuggled in close. “The comet needed a debate. It needed to clarify its options. Winston did his duty by debating so well, whatever side you think he's on.”

Elgin had to admit the logic of what she said, and his senses confirmed it. “I guess so,” he said. “You say it and I know it's right.”

“That's right,” she said, pressing firmly against him. “Now, there's something I need you to do for me.” She led him toward the bedroom. “I seem to have an excess of energy after the debate. I'd like your advice on how to best use it.”

Chapter Twenty-Five – They Move In Together

They decided to move in together. Elgin's rooms wouldn't do, even though he was very comfortable there. Even with the medical equipment removed, it was still just two rooms. More than adequate for a single man, but too small for two. Frances had a slightly larger set of rooms which might have been all right, but she decided they should start fresh, rather than just move into her place.

They took their time looking. There was no hurry. And there was no need to snap up the first thing they saw, either. There was always more accommodation than needed in the comet. They had plenty of room, after all, and weren't afraid to use it. Frances thought it was an indicator of their general sense of optimism. Having more living space than they needed showed that there was an assumption, conscious or not, that they would need it in the future. Assuming that the population will grow, she told Elgin, is a good sign of optimism.

They didn't see anything they liked, although they saw plenty that would do. Elgin was willing to take almost anything that was big enough. He instinctively understood that they needed enough room that they wouldn't get in each other's way, but after that he figured they could make a home out of anything. Heck, he'd bunk down in an unused storage closet if he was sharing it with Fran. But she had more of a vision of what they needed, and he knew that her vision was better than his about such things.

She suggested that they live on the Square, in one of the apartments above the shops and offices. She thought it would be nice to sit out on the balcony and watch people. "It's the heart of the comet," she said. "It's where people come. Where things happen."

"Okay," said Elgin. He liked the Square. It was still sort of magical for him after that first time, and if it made Fran happy then it made him happy. So they spent a lot of time there during the week before the vote. They saw the people watching the videos and discussing them. They overheard arguments, some of them quite heated, although never physical. Comet people, except in rare cases, didn't resort to violence over their opinions. They did allow themselves to have very energetic arguments, though, and they heard a few of those while they were apartment hunting.

There was nothing available that suited their needs. The Square was a popular place to live and people tended to hang on to it once they got a place there. Other than a few one roomers, the kind of thing that changed hands frequently, they couldn't find anything. It looked as if they would have to settle for something else.

Then Elgin realized something. The end of the Square where the video screens were set up, the Yellow Comet end, didn't have any apartments. Even though it had a full complement of shops and offices on the ground level, it had nothing above that. The other three sides were pretty well completely developed right up to the ceiling, but the wall at the yellow end was blank.

When he mentioned it to Fran she looked and said, "Of course." Then she went quiet for a few minutes. Elgin let her think while he looked at the blank wall and wondered. It didn't take long to figure out why the other sides, red, orange and green, would be occupied while yellow wasn't. It was because of what happened to Yellow Comet. People, out of respect or because of superstition, were reluctant to live there. Elgin shrugged and resigned himself to not living in the Square.

Then Fran roused herself and said, "Come on," grabbing his hand. She led him toward the yellow end, not telling him anything but smiling to herself. Elgin was happy to let himself be towed along.

When they got closer they began to notice details about the people watching the videos. The indistinct raised voices ringing around the Square could now be identified with individual people. One

particularly robust-voiced man was gesticulating with his hands while pointing at the screens with one wing. The person he was shouting at probably couldn't hear him because she was doing much the same thing, only her voice was higher pitched. Someone in their small audience caught sight of Elgin and Frances and shushed them, quieting them just as the couple arrived. Everyone turned to look at them and Elgin said to himself, "Uh-huh. There they are. Sappy grins." They were still an item, still a phenomenon. Their love story was on its way to becoming a legend already.

"Hello," said Frances. "I'm glad to see you're discussing the joining." She tipped her head toward the videos.

The combatants glowered at each other and one of their audience said, "Every day." Then, with a laugh, "All day."

Fran's laugh was musical, and not only to Elgin. She had a laugh that could make people feel special for causing it. "I'm glad," she said. "This is an important decision."

"Oh, they're not arguing about that," said her informant. "They both think you're right. You and Elgin."

"And Stanton," she said. "And don't forget Buzzard." They all agreed, nodding their heads. "I'm glad you agree with us, but what are you arguing about, then? If it's all right to ask."

The woman spoke for them, one woman to another. "He thinks the rumple is wrong." She pointed with a thumb. "He thinks it should be higher."

The man jumped in to clarify and they almost got going again. Frances said, "You might be right. It is just a simulation, and based on preliminary data at that." The man lifted his chin at the woman. "Of course," Fran added, "it's Buzzard's data, and he's pretty thorough." There was a murmur of assent and the woman looked pleased with herself. "But we'll find out who's right when the time comes. That is, if the people vote for the new plan."

"Oh, they will," said the woman, to general agreement.

"I hope you're right," said Fran as she and Elgin carried on toward the yellow wall. She glanced back and saw the woman slip her arm through the man's. That pleased her so much that she did the same thing to Elgin. There was a faint suggestion of a collective, "Awww," behind them when she did. Elgin rolled his eyes and she punched him on the arm.

She took him up above the storefronts to the blank wall, then left to the corner where yellow met orange. There she turned them around and they checked out the view. Dominant was the green side, from where it joined yellow's other corner, sweeping the length of the Square to where it met the red end. That was good since people tended to gravitate to the green side and this gave them a good view of that. Elgin's attention was drawn down the green wall to the red, and inevitably to the pillars at the entrance where he entered the Square for the first time. His mind was flooded with memories, not as powerful as the first experience, but good reminders.

"So," said Fran, "what do you think?"

"Nice view," he said.

"No, silly. How would you like to live here?"

Elgin looked at the expanse of unmarked ice behind them. "Is there an apartment behind here, or are you thinking of pitching a tent?" He squeezed closer to her. "I'd love to live in a tent with you."

She kissed him. "We definitely must go tenting soon." She slapped the wall. "For now, though, how would you feel about building right here?"

He was startled. "Would that be okay? I mean, nobody lives here. Isn't the yellow wall off limits?"

"Not exactly. It's true that nobody's living here yet, but I think that's just hesitancy."

"Nobody's doing it so everyone thinks there must be a reason? So nobody does it?"

"Yes." Fran moved back from the wall and struck a pose, with a hand to her cheek, that women

had used since they were assessing their caves. Elgin, as wise men have always been, was quiet and attentive. She said, "We can have two bedrooms and two living rooms across the front, all sharing a big balcony. The bedrooms will be at opposite ends." Elgin imagined it and it rang true. "In the back, two bathrooms with a large kitchen-dining-common area in between."

It sounded great to Elgin, but, "Why two of everything? We could get by with one of each. At least for now."

If she caught the implication of that last part she didn't let it show. "Someone might stay over, so an extra bedroom. It will be nice to have a bathroom for company. And if one of us is entertaining in one living room, it will be nice to have the other one available."

It was all very logical and, as usual, right. He was only thinking of it as a place for them to live, and she was already planning for guests. Further proof that she was smarter than him.

"So, let's see," she said. "If we make it twenty meters long and about twelve deep, how will that be?" She looked at Elgin.

"That gives about five meters for each room, less the walls. It depends how big you want the rooms." He looked at the wall, but he was seeing what she'd described. "How high is it going to be?"

"We need it good and high," she said. "At least five meters, like most other interiors."

"The rooms are going to be nearly cubical," he said. "Depending on where we put the interior walls." He looked at it for a while, imagining being in it. "I think it will work."

"Good," she said. "And it's an even divisor of the width of the wall, sixty meters. That will simplify future apartments."

There she was again, thinking beyond the present problem. He just sighed and gave her a kiss.

At work the next day he was talking to Stanton about their house hunting. As engineers do, they were soon into the details. How would it be made? How would the rooms be divided? Could there be a more efficient layout? "Oh no," said Elgin. "That's her department. She knows what we need. My job is to make it happen."

Stanton nodded. "You're right. Besides, it was Fran's idea, right?"

"That's right. She just seems to know what she wants."

"And you don't care, as long as she's happy and you're together."

"Exactly!" That made him think about them being together. And that made him think about how they seemed to be everybody's favorite couple. "Stanton," he said.

"What?"

"When is it going to wear off? I mean, we've been together for a while now, but people are still acting mushy."

"I don't know."

"Is this normal? Do people always act this way? I've seen other couples. They look happy, but nobody's looking at them the way people look at us."

"I can't really help you, Elgin. There's always this reaction when a young couple falls in love, but you're right, it tends to wear off. I've never seen it like this."

"Well, I hope it wears off soon," complained Elgin. "It's getting so I don't want to go out in public."

"Oh, that's not entirely true, is it?" When Elgin looked at him, he smiled. "You don't care where you are when you're with her, do you?"

"Well, no."

"You don't really care where you are or who's there or what they're doing, because you're focused on her."

"That's true."

"And she's focused on you the same way."

"She is?"

"Yes, you idiot. Everyone can see that." Stanton shook his head, smiling indulgently.

"Everyone can see it. When you two are there, that tends to stand out."

Elgin thought about that. "But, isn't it the same for other couples who've fallen in love?"

"Yes, but there's something different about you guys. I can't quite pin it down, but something seems special." He shrugged, frustrated with his inability. "You seem to, I don't know, glow or something when you're together."

"Oh," said Elgin, because that rang a bell. "I do feel like I'm glowing when I'm with her, but I thought it must be the same for everybody."

"It is," said Stanton, "but you guys have taken it beyond normal. It's not that it's different, it's just like you've taken the usual stuff and, well, refined it maybe." He shrugged again.

Elgin nodded, resigned but happy. It looked as if he'd have to put up with the sappy grins, but it was worth it. "What's it going to be like when we move in together?"

"I'm sure it will ratchet up another notch or two, but I don't think you or Fran will care too much."

With Stanton's help they got hold of the builders and began the arrangements. Elgin drew up the plans himself, not having much to do at work as they awaited the outcome of the vote. They had two meetings with the builders before the work began. In the first they told them what they wanted. Then they had to sleep on it and come to the second meeting with any new thoughts or changes. Once the work commenced they couldn't change their minds again.

The builders and fabricators started work on the day of the vote. Polling was open all day, so nobody had any trouble casting their ballot. The turnout was excellent, with nearly everyone voting. That meant there were almost two thousand votes cast, since everyone who understood how to do it was an eligible voter. There were no restrictions based on age or mental capacity. They believed that everyone who had a stake in the outcome should have the right to vote. The only exception was anyone who committed a crime that was proved to have harmed the comet. They lost their franchise for the duration of their sentence. There was no one in that position for this vote.

The people voted overwhelmingly, by a margin of four to one, in favor of Shimmer's plan. There was a festival atmosphere in the Square from the beginning, and once the results became obvious it turned into a celebration. Everyone, including Winston, stopped and congratulated Frances and Elgin, who spent most of the day in the Square with Buzzard and Stanton. They were all energized and already thinking about tomorrow and getting back to work.

To add to the excitement, in the evening there was an announcement over the public address system. Accumulating data and calculations had led to the conclusion, with a high degree of probability, that the Visitor was artificial. Here was solid evidence of intelligence from another world, and it was coming to them. The celebration became a party that kept some people up all night.

Chapter Twenty-Six – The Swimming Hole

The comet was buzzing the next day. Everyone was talking about the Visitor, even as they began preparations for the joining. It was the first thing Elgin and Buzzard talked about when they got to the shop. Buzzard said he always knew it wasn't a natural phenomenon. When Elgin asked him how he knew, he said it was the most likely explanation. After seeing all the data, it was the only thing that made sense.

“So,” said Elgin, “what do you think they want?”

Buzzard looked away. “Don't know what they want.” He started shuffling the papers on the desk, not looking up. “Don't know.”

Something was worrying him about this. Elgin could see that and it worried him, too. Buzzard was normally eager to talk about such things, to speculate on the unknown with insufficient data. Elgin was tempted to press him on it, to get him to explain, but he decided against it. He didn't want to prolong his friend's distress. He said, “It's going to be great to get to work on the joining, eh?”

That brightened him right up and he began chattering, a happy smile on his face. He was invigorated by the prospect of so much work, by the anticipation of so much data to comb through. His enthusiasm was infectious and soon they were fully engaged, bouncing thoughts off each other and igniting an explosion of ideas. The first thing they realized was that they needed detailed knowledge of the composition of both comets, especially the sides that would meet.

They went to Stanton. He agreed and arranged for a complete acoustical profiling, using sonar and seismic imaging. To begin with they set up a more thorough analysis of the areas already done for the video, but the plan was to widen the area of interest until the facing hemispheres of both comets were completely mapped.

It wasn't long before they had enough data to start putting the plan into action. The calculations showed, and were confirmed with each new iteration, that the comets would not be in danger, so they stopped planning to slow the contact speed to zero and began aiming for one meter per second instead. That was the moment when it sank in for Elgin. Everything changed from theoretical to practical when they committed themselves to what some people had taken to calling a “controlled collision.”

They soon settled into a routine of working by day and getting together during their off hours. Elgin and Buzzard had flashball practice twice a week in addition to a couple of games. They both continued to improve, although Buzzard was beginning to level off. Elgin kept seeming to find new things to work on, while Buzzard continued to refine and perfect his specialty.

Elgin and Fran were able to move into their place after a month or so. During construction he'd got them a pair of vacuum suits and taken them outside the wall to observe. There wasn't much to see out there, other than snow, but it was fascinating to view the process. First they packed snow to the shape of the box they wanted to build, then they formed the two meter thick outer shell in layers of water ice. Interior dividers were made much the same way. One interesting technique was in the ceiling and all walls whose edges touched the Square. They were made to allow light from the Square into the interior of their rooms. The ceiling and most of the walls glowed.

They also spent a lot of time in Stanton's bubble, which was usually crowded. There was something about the sense of exposure that made it seem more real than watching the little comet get closer on a screen inside.

Now that the “controlled collision” had been affirmed, Frances had a lot of work to do, too. It

wasn't just a matter of lining up the comets and getting the speed right. There were also many things to do in the comet to prepare for the impact. When the comets made contact they would experience changes to their velocities. Anything in their settlement that wasn't affixed was going to start moving relative to the comet. She had to make sure that there was nothing that was going to cause damage to the structure or danger to the inhabitants when that happened.

One troublesome area was the water reclamation facility. The sewage treatment and water purification plants both had large quantities of liquid water. One effect of that was that they had to be kept warmer than other areas. Add high humidity to the high temperature and this place was like the tropics of the comet. The problem was, all that water was going to slosh like crazy during the joining.

They could plan to shut down the treatment part for a few hours. They could reduce the water content and seal the vessels for the duration, then start it up again afterward. The hard part was the purification system. It consisted of long tubes of water that supported a thriving ecosystem based on algae. The whole thing worked together, with dirty water going in one end and clean water coming out the other. They couldn't drain it without breaking its working cycle, which might take a long time to get restarted and stabilized again.

Fran took Elgin there to have a look. The supervisor gave them a tour, explaining the function as they went. All the tubes were parallel and they were oriented very close to the main vector of the collision, so the surging water would be largely unimpeded. Elgin asked their guide one question. "Can the ends be sealed?" He got an affirmative answer, with tons of explanatory embellishment that he didn't hear. Eventually the supervisor realized that Elgin was no longer listening and looked, somewhat miffed, at Frances for an explanation.

"He's visualizing," she said, touching the man's arm and turning him away. "It's best to just pretend he's not here for a while," she said with a smile. He was somewhat mollified. When she said, "I think it's fascinating that these little creatures can do so much for us," he was completely won over.

"They're plants," he said. "They represent one of the major evolutionary transitions in the planet's history." He earnestly explained everything in depth and detail. It was obvious that he didn't get the opportunity very often, with algae and sewage treatment not being highly interesting to most people. He was disappointed when Elgin rejoined them, but Frances made that all right too.

"I think we can do it without disrupting your operation too much," Elgin said. "Since there won't be any inputs at the time, we can seal off both ends of each tube," he told them. "Then I think we should put some baffles in them, to dissipate the energy." He looked at the supervisor to see if that would be okay. Getting a nod, he finished up with, "We're going to have to buttress these stanchions, though. They're too light."

The man thought about it, then said, "That should all be okay, as long as it doesn't interfere with its function."

"That shouldn't be a problem," said Elgin. "You'll have to put up with people getting in your hair for a while, though."

There were a surprising number of things like that, once you started to think about it. Everything that was loose had to be considered a potential projectile. They had everyone on the lookout for things that might be overlooked and they set up a forum on the network where they could collect and discuss ideas. Fran also got the children involved. She began an initiative in the classrooms, a friendly competition to see who could identify the most potential problems and suggest the best solutions.

Fran liked children and she loved to do things with them. One day she said to Elgin, "I'm taking some kids swimming. Do you want to come?"

Of course he wanted to come, but swimming? His mind was struggling with the concept of whether a swimming pool would work in microgravity.

"Yes," she said, "at the reservoir."

He had heard that there was a reservoir and had put the information in the back of his mind. It was just a fact and before now he hadn't thought about how it might be realized. "Yes," he said. "For sure. Let's go swimming." Now his brain was churning, trying to anticipate what it should look like.

"Okay," she said. "We'll pick the kids up after lunch."

"What do I need to take?" he asked.

"Nothing," she said. "No bathing suit required, obviously, and the water just runs off this fur, so no towel either. You just give a little shake and you're dry." She gave a little shake to demonstrate and he liked it so much that he asked her to do it again. With one thing and another they passed the time before the outing quite pleasurably.

They picked up the kids at school. The children were raring to go. They swarmed all over Frances, laughing and chattering and saying her name, and they gave Elgin a curious glance too. Fran pointed at him and said, "This is Elgin. He's coming with us." Then she broke away to chat with the teacher, whom she seemed to know quite well. And Elgin smiled, realizing that she seemed to know many people well. That was her way. His adoring reverie was broken when he became aware of being in a crowd of children. They must have turned their attention to him when Fran left. He smiled and exchanged a few greetings, but couldn't think of anything to say.

One little girl took care of that. "Are you with Frances?" she asked.

"Yes," he said uncertainly.

She considered that, looking into his face while the other children looked back and forth between them. He could tell he was being judged and had no idea how he was doing. Finally she gave a little nod and said, "Okay," and the happy chattering started up again. Elgin was amused at how relieved he felt, and also left wondering how much of his acceptance was due to being with Fran. Then it occurred to him that he might have been judged on whether he was worthy of being with her.

This was getting too complicated so he concentrated on what the kids were saying. It was mostly a barrage of questions and he tried hard to answer them. "We've been together for a few months . . . I'm an engineer . . . No, the Square was built before my waking . . . Yes, I worked on Stanton's ball . . . Yes, I do play flashball . . . Yes, Buzzard is a good friend of mine . . . I like the way he plays, too . . ."

Finally Fran came back and Elgin's swarm disappeared. She got them moving and pointed in the right direction, then she fell in beside him. "How did it go?" she asked with a grin.

He laughed. "Fine, I think. It was a little scary there for a while, but I think I passed."

She laughed too. "Kids can be pretty judgemental," she said, "but they're fair. And they really want to like you if you give them a chance."

"That one little girl," he said. "She was something else." He looked at Fran. "You know," he mused, "she reminded me a bit of you."

She was pleased and he could tell she was blushing under her fur. "She's come up with some interesting ideas," she said. "She's the one who pointed out that people are loose and might be a problem during the joining."

"Oh," he said. "And you've taken her under your wing."

She liked that image. As they spread their wings and flew after a flock of excited children, she smiled at him, her face happy and relaxed. "Yes," she said. "Under my wing."

The school was just off the Square on the orange side and the swimming hole, as the kids were calling it, was out the red end, beyond Elgin's old rooms. They attracted a lot of attention on their way through the Square. People looked up when they heard the commotion and most of them grinned at the antics of the children. Plenty of them nodded or waved at Frances and Elgin.

In the corridors Elgin was worried that their energetic, haphazard progress might cause traffic

problems. The knot of little fliers seemed to be moving along of its own accord, while its members concentrated on talking and playing. To Elgin's surprise, though, they were unconsciously keeping to their flying lane even while seeming to pay no thought to it at all. It reminded him of the commuter he'd seen on his first day out with Stanton.

They finally came to a narrow section of corridor. The width smoothly decreased until it was half of normal. They seemed to suddenly pick up a tailwind and Elgin found himself automatically trying to slow down. No one else did, though. Fran sped ahead of him, seemingly unconcerned, and the kids were laughing and whooping as they were swept into a thickening fog. Of course! He made a few hard flaps and caught up to them before they disappeared in the mist.

Here was a classic example of the Venturi effect. As the moving air, normally circulating so slowly that he didn't notice it, was forced through a narrowing channel, its speed had to increase. Higher speed creates lower air pressure and that causes water vapor to precipitate out, hence the fog. Now he was working hard to keep at least one of his companions in sight. They were flying blind, but they seemed to know where they were going, and he didn't want to run into the walls at this speed.

Finally they burst into a large gallery, and he fluttered to a stop in disappearing clouds of fog. The children were giddy with excitement, but Elgin's attention was focused on what looked like a small flashball court in the center of the cavernous space. But it wasn't a ball of ice. For one thing the refractions were different, and for another the surface was active with subtle wobbling. He was looking at a globule of water about forty meters in diameter.

"Wow," he said.

Fran looked pleased with herself. "Isn't it nice?"

"Yes," he said, sniffing the air. He took a great draught. "And humid too."

"I knew you'd like it."

"I do! I love it." A large cavern, about three times the diameter of the ball of water, filled with the happy echoes of children at play. Everything was water, from the spherical pool in the center to the far walls of ice. The space between was filled with so much water vapor that the least thing would provoke it to condense out. He could see tiny droplets forming on their fur. He saw jets of mist forming spontaneously. He thought they might be caused by bursts of air, assuming that's how the "swimming pool" was kept in position. He even thought he saw tiny tracks forming randomly, as in a cloud chamber. Cosmic Rays? Probably.

The children, who had exploded out and filled the gallery with their energy as soon as they blew through the door, were drifting in and gathering by the water. They mingled, waiting, throwing many glances at the adults. Frances flew over, counting them as she went.

"Okay," she said, "you all know the rules."

They nodded seriously.

"Does everyone have a buddy?" She watched them pair off. "Good. You keep track of each other." More serious nods. "And remember," she began, "It's not fun . . ."

". . . unless everyone's having fun," they finished.

Fran was about to let them go in when she saw a contemplative look on the girl, Maria.

"Maria," she said quietly. When the girl looked she asked, "Is something bothering you?"

"No," Maria said, "it's nothing. I was just thinking about the water." She glanced at its gently shaking surface a few meters away.

"The water? What about it?"

"Well," she said, "it's going to be loose, too. At the joining, I mean."

Everyone looked at it. Fran and Maria shared a glance and both of them looked at Elgin. He said, "No one else has ever brought that up." Then he went quiet and the kids looked at Frances.

"It's okay," she said, "he's an engineer." The children nodded, understanding looks on their

faces. "He's visualizing what will happen." She indicated the water. "You can go swimming now if you want. You can find out later."

A few of them would have gone right then, but most of them made no move. When Maria indicated she was waiting, they all waited. It didn't take long.

"No," said Elgin, "it won't hurt anything. We can just let it be." He looked at Maria and Fran. "But I do think we should set up a bunch of cameras in here."

"Oh, yes!" said Maria. "Can we?" She looked at Fran who looked at Elgin.

"Sure we can," he said. "No problem."

Maria wanted to say something, but seemed reluctant. Fran encouraged her and she finally said, "Could I do it? I mean, can I help with the cameras?" Her normal air of assurance had been replaced by uncertainty. "And the videos. Can I see the videos afterward?"

With both of them looking at him, Elgin only had one option. "Of course you can, Maria," he said. "If you're interested in that kind of thing then we certainly want to encourage it." He made eye contact with Fran and asked her a silent question. When she nodded he added, "We can make it a school project if you like. Your whole class can help."

She liked that and so did the other kids, so they said they would firm it up with their teacher later. "So, about a month before contact," he told Maria, "if you remember that long and still want to do it," there was a loud round of affirmation from them all, "then you get hold of Frances and we'll set it up." Everyone seemed satisfied and their attention turned immediately back to the water.

Fran clapped her hands. "All right," she said, "does everyone still want to go swimming?" They did and she said, "Go!"

They stood back and watched their charges dive in. One or two of them eased their way into the water, but most of them took a couple of flaps and plunged in head first, tucking their wings firmly onto their backs. Once the splashes had drifted away they were able to see clearly into the water, though the now-pitching surface continually broke up the images of the swimmers. Elgin could see that they didn't use their wings in there. He guessed that they were too lightly built and not stiff enough to be effective in water.

Kids were popping their heads out of the water at random points on the sphere to catch a breath of air. Occasionally one would fully emerge, turn sharply with a quick flap, and plunge back in. A few of them were practicing diving. They would gather about ten meters from the water and then, one by one, fly hard at it and "dive" in. Then Maria popped out a few meters to their right, sticking out of the sphere almost at right angles to them, her legs still under water. "Are you guys coming in?" she asked, shaking the water off her wings. Elgin was caught by the sight of her wings. Soaking wet, with the fur plastered to their skin, they became translucent. He could see the shadows of their bones, and their resemblance to big, long-fingered hands was striking. He knew the body was induced to grow modified hands for wings, but seeing it this plainly was far more effective than simple knowledge.

"Yes, we're coming," said Fran. Then, tipping her head at Elgin, "It's his first time," she said, smiling.

"Oh," said Maria, her face understanding. She was about to say more when someone grabbed her by the feet and pulled her back into the water. She only had time for a little squeak before snatching a quick breath. They could see her chasing someone toward the other side, their images bouncing and breaking up.

"Come on," said Fran, and she glided head first through the surface.

Elgin took it a little more slowly. First he got close and stuck his hand in to test the temperature. It seemed all right so he took a breath and stuck his head in, which looked funny from both sides. Opening his eyes, he was now able to see everything distortion free. The kids looked as if they were playing in the open air. They were flying or hovering just the same, only it was much slower

and instead of using their wings they were using their arms and legs. And of course they had to keep going to the surface for air.

He spotted Maria, who was leading a small formation in some kind of synchronized exercise. They were forming patterns and making turns and looping through the surface to breathe, all in graceful unison. It was like synchronized swimming, but without the distraction of gravity. It looked effortless in its slow, stately beauty.

He looked around for Fran and found her swimming just below the surface. She was doing the breast stroke, gliding serenely around the pool, popping her head out for a breath every few strokes. She looked as if she was doing laps, completely unconcerned about anything else, but Elgin could see that she was in a perfect position to watch the children.

He yanked his head out and caught his breath, then he went in. It was a lot like floating in the air, except for the heavy resistance and the fact that he couldn't breathe. Some of the kids saw him and came over to swim circles around him. He grinned back at them and headed for the other side. He underestimated how far forty meters was under water and by the time he got there he was badly out of breath. He swam straight out of the water, fully emerging into the air, gasping hugely. The kids came out too, fluttering around him, quite concerned. When he noticed that, he hammed up his panting and their worry dissipated into laughter.

When he went back in he decided to stay close to the surface. Deeper dives could wait for later, after he was more used to it. For now he emulated Frances, doing a slow breast stroke in an orbit approximately at right angles to hers. It didn't take long to see why she did it. In less than one circuit he'd found the rhythm and was able to keep it up almost automatically, freeing his attention for watching over the kids. That left most of his mind unoccupied.

It occurred to him that he didn't experience any undue water pressure when he swam through the center of the pool. He was "under" as much as twenty meters of water but he didn't feel so much as a twinge in his ears. It was logical, of course, that water held together by its own self-cohesion wouldn't act the same as water compressed by gravity. If he had thought about it he certainly wouldn't have expected to find any significant pressure gradient, but he hadn't thought about it.

He looked around to find Fran and had to look back to see her because of where they were on their orbits. She had stopped swimming and was looking his way, and with good reason. He found that he was being followed by a line of children stretched out behind him, all doing the breast stroke in unison with him. He bobbed out for a breath and so did they. He went back under and so did they. He was looking back past his left shoulder and so did they. He burst out laughing and that's not something you can do in water, so he broke into the air, spluttering and coughing and laughing. So did they.

Fran and the rest of the kids came over and everyone was having a good laugh. She checked to see that he was all right with it and saw that he was genuinely amused and not offended at all. She fell a little more in love.

"Okay," she said, "everybody back in the pool for one last swim, then we'll go." As they bolted she added, "Be careful and watch your buddy." Those who looked back after diving in, and that was most of them, saw Frances hug Elgin and give him a big kiss.

Chapter Twenty-Seven – They Go To The Doctor

“Rannie?”

She looked up with a surprised smile. “Yes?”

“May I call you Rannie?” They were on their new balcony, having breakfast and watching the Square wake up. Elgin was enjoying a piece of toast with iceberry jam, idly wondering how yeast would rise in microgravity. “I’d like to call you that, if you don’t mind. It sounds right.”

“Of course you can,” said Fran. “I’d like it too.”

It came out the night before, as they snuggled and talked far past midnight. Their bedroom was the one against the orange wall, farthest from the hallway entrance at the opposite end of their rooms. Their ceiling was colored by the night lighting of the Square, when everything was turned off except the lights in the columns and friezes. The four colors were somewhat blended but were visible individually as well, so their ceiling was dominated by the proximity of orange and yellow, with green and red playing lesser roles.

They were telling each other as much as they could about their previous lives, hungry to know, but with a sweet regret that so much of their time had been spent apart. Fran talked about a niece that she was very fond of, a sweet, bright little girl. “I think Maria was probably like her when she was younger,” she said. Her niece was a good talker, but she had trouble with Fran’s name and always called her “Rannie.” It became a pet name amongst family.

Her niece was one of the people she lost in the Yellow Comet incident, so remembering her was painful. But she was no different from most of the people on Green Comet. Pretty well everyone had lost somebody in that tragedy. Everybody had to deal with it, and she knew that avoiding the memory was not the way. She wouldn’t ask Elgin to not remind her. Instead, she was glad to have her memories stirred in such a beautiful way. Each time he used that name her niece would be commemorated with love. “Yes,” she told him again, “I would love it if you did.”

“Thanks,” he said. “I didn’t want to intrude on something special, but it just feels right.”

She came over and snuggled under his arm. “It is right,” she said. “It’s perfect.” They watched the Square for a while, until he finished his piece of toast and had to prepare another. He tried to free his arm but she said, “No you don’t. I like that right where it is.” She buttered a piece of toast and spread some jam on it. “Here you go,” she said, burrowing back in. “Didn’t anyone ever tell you that when you put your arm around a girl, it’s hers until she says so?”

“No,” he said, biting his toast, “but it sounds okay to me.” He chewed for a moment. “Except maybe flashball. This might be a little awkward playing flashball.”

Her laugh rang out across the Square, stopping people and turning heads. When they saw who it was, they smiled and waved and went on with their business.

While they had their breakfast and talked, the lighting in the Square had been coming up. The daytime lighting increased its intensity while the columns and friezes darkened. It took about a half hour to make the transition from night to day. When it was done, the Square looked as if it was lighted by the Sun on a day with a high, thin overcast. The indirect lighting, though it was distinctly yellow and dim, looked bright and white to their enhanced eyes.

“Rannie?” said Elgin, softly.

“Mm-hm?” she murmured.

“What do you think of the Visitor?”

“The Visitor?” He could feel her tense subtly. “What about it?”

“Well, now that we know it’s artificial, what do you think they want?”

"I don't know, Elgin," she said. He sensed some evasiveness. It was like Buzzard's rejection of the question, only much better disguised.

"Please, Fran," he said gently. "I can tell. Both you and Buzzard are concerned, but you're both hiding it."

She sat up, out from under his arm, and turned to look at him. He was moved again by her golden beauty, nearly hypnotized by the shifting light reflected by her tapetums. She put her palm on his chest. "We don't know anything for sure," she said, her expression both minimal and profound. "We've just shared some doubts."

"Doubts?"

"Yes," she said. She looked out over the Square, and Elgin saw a brief flicker of sadness cross her face. "It's more of a feeling than anything else," she said quietly. "We just wonder why they haven't tried to communicate with us." She turned her face back to Elgin. "We decided pretty early on that the Visitor is artificial and we can't think of any good reason why they wouldn't talk to us."

He checked and double-checked, but his initial sense that it sounded right stood up to scrutiny. The bad feeling that he got from Buzzard was now confirmed and multiplied by Fran. He asked, "What have you done about it? Have you warned anybody?"

"What would we tell them? That we have a bad feeling?"

"But it's right. You say it and I know it."

"I don't think that would qualify as proof, Elgin." She turned and snuggled back under his arm. "Would you like another piece of toast?"

"But we can't just leave it like this. There must be something we can do."

"The envoys will probably meet up with it soon. Maybe we'll find out more then." She held up a piece of toast. "Jam?"

He knew she was right. There was nothing they could do now that would help. There were plenty of people warning of the danger and predicting doom. If they said anything now when they had no proof, they'd be just another pack of crackpots. She was right. The best thing would be to wait and see. "Yes, please," he said, "lots of jam."

After a few moments where the crunch of toast was the only thing breaking their silence, she said, "There are no iceberries growing in the Square, are there?"

He looked around and didn't see the distinctive texture and sheen of an iceberry patch on any of the walls. "It doesn't look like it, why?"

"I think we should grow some," she said, gesturing at the facade of their apartment. "Right here on the front. There's quite a bit of blank wall there."

"Is that allowed? I mean, isn't there a reason for it?"

"I don't know," she said. "I'll have to look it up, I guess. But if it's okay, do you want to?"

"Sure," he said, popping in another bite. "I love iceberries."

"Good. Me too. I'd love to come out here in the morning and have a couple of fresh berries for breakfast." She stared at the wall, thinking. "Is it hard to grow them, do you think?"

"I don't know, but I doubt it. They seem to grow just about anywhere and I never see anyone tending them."

"That's right," she said. "About the only people you see around them are the kids grabbing a quick snack." They shared a chuckle over that image. "Why shouldn't they be able to do it in the Square?"

"Are you thinking we might have kids up here picking berries off our wall?"

"I hope so," she said, smiling up into his face.

"Me too," he said, leaning forward for a kiss. "I like kids. I'd like it if we had some around

here all the time.” He looked deep into her eyes so she'd know what he meant, and was surprised and confused by her complicated expression.

She was looking down now, and her voice was low. “You'd like to have children, wouldn't you?”

“Of course,” he said. “The more of you there is in the world, the better.” He tried to see what she was thinking but she wouldn't look at him.

“I'd like it, too,” she said, looking out at the now-bustling Square, “and I had an idea you wanted to.” Finally she faced him. “I thought it might come up so I made an appointment.”

“What kind of appointment?” He was intensely interested now. Anyone else might have wilted under his focus.

“With the Doctor,” she said. “I've already been once and now I think we should go together.” She had on her business face. “We'll need to have some tests done if we're going to make a child.”

It sounded right to him and he also knew it was right. The comet couldn't afford any problems it could avoid, so anyone planning children got tested to rule out anything foreseeable. Naturally, any child born with congenital difficulties was accepted and raised and supported to the best of their ability, but in their situation, with highly constrained resources, it was prudent to avoid the necessity.

“You're right,” he said, taking his last bite and dusting off his fingers. “When's the appointment?”

“This morning,” she said, getting up and picking up dishes to take inside.

He picked up the rest of the dishes and followed her. “This morning?” He hurried to catch up. “How did you know?” She had an appointment scheduled for this morning? Before they talked? Before he even thought about it? Then he laughed at himself. Of course she knew before he did. She always did. “Never mind,” he said, taking the dishes from her and putting them in the sink bladder. He sealed it up and turned on the water, sliding his hands into gloves to scrub the dishes. “When do we have to be there?”

She was waiting to dry, standing beside him at the sink. “In an hour or so,” she said. “But the Doctor said there's no deadline. He's cleared his schedule for the rest of the day, so he says we can come whenever we want and stay until whenever.”

“Boy, you must have some pull,” he said, removing his hands and cycling out the soapy water, then in the rinse water. Back into the gloves for a quick swizzle, then let the bladder squeeze out the water. He unsealed it and she began to dry.

“The Doctor is a friend,” she said modestly. “We're always happy to make time for each other.”

“I look forward to meeting him.” He put away the dishes as she passed them to him.

The Doctor's office was just off the Square, a few meters down one of the corridors on the orange side. They could have just flown down from their balcony directly to the portal, but they chose to go out via their hallway. Fran said, “We should use it once in a while, even if only for practice.”

“Yeah,” said Elgin, “otherwise we might as well not have a door at all.” He opened it for her, ceremoniously ushering her out. The hallway was still pristine, with the sharp, clear lines of fresh icework. It was likely to stay that way for now, since their's was still the only apartment that used it. It wouldn't be long, though. Work was already underway on another apartment on their floor, and the ones above were in the works.

They took the elevator down to the ground floor. That is, they dropped through a hole into the corridor below. There were some people about, mostly just arriving for their day's work or making an early visit to one of the enterprises on this corridor. They exchanged greetings in passing, with a few words of a more personal nature for the new neighbors they were getting to know. It made them glad they came out this way and they resolved that they'd do it again.

They took their time, coasting out through the yellow pillars and angling across the Square, stopping to chat at the slightest excuse. Just outside the orange pillars, they stopped and looked back at the yellow wall and their new apartment. Fran was quiet as they stood there. Elgin could imagine iceberry patches with children foraging in them. He could picture the whole wall, from the top of the shops up to the ceiling, occupied by rooms. Already on their floor, on the other side of the yellow columns, he could see faint shadows of activity as another apartment was being prepared behind the ice. His mind was full of the potential of the future and he smiled as he felt Fran's hand take his.

The Doctor met them personally and led them into his office. It was arranged traditionally, with two chairs facing a desk and his chair behind it. He seated them after a brief introduction and a quick, familiar hug from Fran, then he went around and sat down. He had a few pieces of permapaper in front of him and he studied them, a slight doctorly frown between his brows. It was the space above the brows that caught Elgin's attention. The Doctor seemed to have an unusually high forehead, and above that the fur looked really thin. It was the first sign of baldness, or hair loss of any kind, that Elgin had seen since waking up on the comet. He was surprised. You never saw this with other fur bearing animals.

The Doctor looked up and caught him staring. Elgin was embarrassed but the Doctor wasn't. He said, "It looks strange, doesn't it?"

"I'm sorry," said Elgin, "I didn't mean to be rude."

"Don't apologize. It's unusual and I'd be worried if you weren't curious about it." He leaned forward and tipped his head down, ruffling the thinning fur with his fingers. "It runs in my family. The men on both sides have always tended to go bald young. Even the women are prone to thin hair."

"Thank you, um . . ." Elgin realized he wasn't sure of the man's name.

"Doctor," said the Doctor. "It's my comet name. You can call me Doctor and refer to me as the Doctor."

"Okay, Doctor." Elgin thought about it. "But you're not the only doctor here, are you?"

"No. There are about a dozen of us awake at any time."

"Isn't that confusing? Aren't the others also referred to as the doctor?"

"Yes," said the Doctor, laughing heartily. "Some of them are mad at me, but I think they're secretly annoyed because they didn't think of it first. They thought they were being clever by choosing names like Galen and Hippocrates." Fran joined in the laughter and so did Elgin, which obviously pleased the Doctor, but his expression was complicated by regret.

Fran saw it and guessed correctly that the news wouldn't be good. "I think we should let Elgin know, don't you?" she said.

The Doctor looked glumly at his papers. "Of course," he said. He wrestled for the words, glancing sadly at them. Why, he wondered, do things happen this way? If anyone should be having children, it should be these two. Not only because they were obviously such good stock, but also because it would be the perfect expression of their legendary love. But he was a doctor, and he had learned long ago that things happened to people not because they deserved them, nor because they didn't. Things happened because they happened and the people they happened to were just in the way at the time. He had also learned that the best words at a time like this were the plain, honest ones.

"Elgin," he said, "Fran came to me last week for some genetic tests." Elgin glanced at her and back to him. "She wanted me to confirm something for her. Although I think she was hoping I could somehow refute it." He looked at Fran, so beautiful and strong, but with a fragile hope hanging on, like a child's hope that the words of someone with authority could make it so. He forged ahead, reminding himself that he wasn't personally killing that hope. "Nothing's changed, Fran. Your imprinted genes are still there. Any child of yours would be at great risk."

She bowed her head, looking very small in her chair. Elgin had lost the thread when imprinted

genes were mentioned, but he hadn't missed the meaning. He said to the Doctor, "Do you mean she can't have children?"

"No," said the Doctor. "You can have children if you want, but because of Fran's genetic condition it would be dangerous."

"Dangerous for her?"

"No, for the baby." The Doctor used plain language for him. "She would pass on the genes and they could make the baby very sick."

"But why don't they make her sick?"

"They don't make me sick because they have a backup," said Fran in a small voice. Her eyes flicked up to meet his, then back down. "Our genes come in pairs, so if one is damaged the other can take over."

"Then that's okay," he said. "Your backups are working and so would the baby's."

"But with imprinted genes there is no backup," she said.

Elgin didn't reply. He could hear it. He had heard it in the Doctor's voice as well, but he'd been trying to ignore it. What they were saying was right. They shouldn't have any children.

"I'm sorry Elgin," the Doctor said. "More sorry than you think. Any child of yours, of the two of you, would have been something to look forward to."

Elgin's desperation scrambled for another angle. His beloved was crumpled in her chair, radiating pain. "But, what about genetic therapy, like during hibernation? I mean, if we can grow wings and fur, why can't we fix her genes?"

The Doctor shook his head. "Those things are simple compared to this. They're just manipulating existing functions. Things like imprinted genes and," he patted his head with a wry smile, "baldness are still beyond us."

Elgin subsided. He had the feeling he was only bringing up things that they'd both gone through already anyway. He accepted it and prepared to carry on in this new direction. He reached over and picked up Fran's hand from her lap. She allowed him to take it, but it was lifeless in his grip. "It's okay, Fran," he said, squeezing. "It doesn't matter."

Without lifting her head, she murmured, "But you want children. I know you do." She looked up. "You still can. There are plenty of women who would have your child." Her voice clotted. "Who could have your child." Her head fell again.

"There are plenty of women," he said, "but there's only one of you." He felt her hand grip his. "All I want is you. All those women can have other people's babies." He waited until she raised her eyes, looking at him from under her brows. "I want you, Rannie, if you still want me."

She squeezed his hand hard and launched herself out of the chair. She nearly knocked the wind out of him, then just about hugged his head off as she sobbed into his neck. He wrapped his arms around her and held on. Over her shoulder, past the top of her wing, he could see the Doctor smiling a huge, gratified smile. It looked as if something was glittering in his eyes, too.

Chapter Twenty-Eight – The Lottery

Elgin was subdued after that. He was disappointed that they wouldn't be having children. It had seemed like the natural course for their love to take, to bring children into the world to share it. Now it was gone. He would never have a son or daughter to teach and to learn from.

Frances wasn't subdued. She was a little sad to have her diagnosis confirmed, but it wasn't a surprise to her so it wasn't as strong. The truth was, she was elated. Before the meeting with the Doctor she wasn't sure how Elgin would react to the news, so now she was relieved and emotionally buoyant.

The combination of their moods was confusing for people who saw them together. They still glowed, but now it was unbalanced somehow. The legend was asymmetrical.

Elgin wasn't subdued for long. After a few days he got used to the new situation. He could see that Frances accepted it and most of his concern was for her pain anyway. He saw how happy she was and he realized how glad that made him feel. Soon his spirits lifted and his mood brightened, and once again their love was whole and symmetrical. The legend was back to normal and everyone could relax.

Relaxing and getting back to normal on Green Comet meant preparing for the joining. It meant making preparations for a controlled collision between a sixty kilometer comet and a forty kilometer one. Everything that could be bolted down was. Every structure, every component, every joint was inspected and tested, then reinforced or replaced as necessary.

Frances and Elgin found themselves in the role of representatives. They were available for questions and explanations. They would come around and have a look if anyone had a concern about something or if they just wanted to be assured that their preparations were adequate. They spent a lot of time at schools, educating the children and their teachers. The kids loved to show them their projects. They sought and cherished Fran's approval, of course, but they also looked to Elgin's expertise, his assurance that it was right. They knew instinctively what everyone else learned by experience. Elgin knew.

He was honest. If their project was a worthwhile contribution to the joining, he told them. There was no exaggerated praise, no gold stars. He just nodded and told them it was right and they enjoyed their shared pride of accomplishment. If it wasn't right, he let them know with the same quiet clarity. He told them what was wrong and what they could do to make it right, and they went back to work.

Elgin and Frances were busy, but they still had time for other things. There was flashball, of course. She didn't attend all of his practices, nor did she go to the café every time, but she was there for every game. She knew it was important to him and she wanted to be there to show support, but after a while she found herself anticipating and enjoying the game itself. It was beautiful on the surface of it, and once she got a feel for the game and a better grasp of the rules, she began to see its complexity and deeper beauty.

There was their new apartment as well. They had plenty of company over, from the housewarming on. Every one of their new neighbors was invited over, even before their rooms were finished sometimes. Most of them took away some design or decoration ideas to use in their own apartments, and some did new things that had Fran standing back with her hand on her cheek.

One of their favorite things was going to Stanton's bubble to check on the progress of the joining. Each time, the small comet was a little closer and easier to see. The jets of steam, from very large maneuvering rockets on its surface, were more visible. It was so interesting and such a popular pastime that soon the bubble was crowded to overflowing. They had to establish an honor system so

people would remember to limit their time in there, trying to ensure that everyone who wanted it was given the chance. And that was pretty well everyone.

It occurred to Frances that this could be a problem. "You know," she said to Elgin, "it's going to be even worse when the time comes."

"How so?"

"Look how crowded it is now," she said. "And there's a line up waiting to get in. Imagine what it's going to be like at the moment of contact when everyone is going to want to be here."

"Wow," he said, "you're right."

"We need to do something."

"Like what?"

She thought about it, her gaze unfocused on a rocket plume that had been running for hours. She realized that was a relatively short time, since the first corrective thrusts had been much longer, some lasting weeks in the earliest phases of the project. This current one would qualify as fine tuning when dealing with so much mass and momentum. This ten kilometer long plume of nitrogen gas was the equivalent of a short puff from a maneuvering thruster on one of their small craft. Just as she was thinking that, it stopped. Running as long as it had, it happened to stop just when she was looking at it. "Aha," she said.

"Aha what?" asked Elgin.

"Chance," said Frances. "We have to run a lottery."

"A lottery?"

"Yes. For the privilege of watching the joining from in the bubble."

"Ah, yes. That's the best way."

She looked around, envisioning what it would be like on the day. "Can you calculate how many people could be in here, where everyone can have a good view?"

"I'll give it a shot." He scanned the volume surrounding them. "Meanwhile, why don't you estimate how many are in here now? That will give us something to check against what I get." He knew the dimensions of the bubble, so he had its volume. Divide that in half since it was half embedded in the ground and you got over eight hundred cubic meters. Now, how much to give each one? He looked around and noticed how people naturally arranged themselves. They weren't packed in. They gave themselves room to move and they instinctively arranged their positioning so everyone had a good sightline. So, he estimated four cubic meters per person and came up with a number. By then Frances was just finishing her count. "What did you get?" he asked.

She shrugged her wings. "It was hard to count. They keep moving around. But I get a rough estimate of about two hundred."

"Good," he said. "Excellent. I came up with two-twenty."

"That's roughly ten percent of the waking population, so if everyone participates it will be about one chance in ten." She nodded. "That's a nice number. Easy to grasp and not too small either."

"A nice round number," agreed Elgin. So they did it. They got it all worked out and ready to go, then shelved it until the week before the event, when excitement would be running high. They didn't announce it beforehand, but they didn't try to keep it secret either. Not that they could have if they'd wanted to. Green Comet was a village and secrets don't usually last long in villages. As a result, the people had two things to anticipate for the next two years.

When the time finally came, every waking person on the comet entered the draw. Children who were too young to know what was going on were entered by their parents. Curmudgeons who would normally scoff at the foolishness entered anyway. Even those who might otherwise have given it a pass found themselves getting involved. The excitement about the lottery was almost as great as that

for the joining itself.

The draw took place exactly one week to the minute before that happened. Fran got lucky but Elgin didn't. He was genuinely happy for her and quite content to watch on the big screen in the Square with Stanton and Buzzard, who had also lost. But his disappointment was obvious, that they would be spending such an historic moment apart.

They were talking about it in their apartment. Elgin had just explained his feelings, saying, "I'm glad one of us won. That's almost as good as both of us winning."

"But what if it was you instead?" asked Fran.

"What do you mean?"

"I mean, if you won and I didn't, would you still be happy?"

No, he wouldn't.

"So, what would you do if you had a ticket and I didn't?"

"I don't know," said Elgin. But as he thought about it he realized he wouldn't want to go alone. He would have to find a way to get her a ticket, or . . .

Their doorbell rang. "Who could that be?" said Fran as she went to answer it.

Elgin came along. "You're not expecting anyone?"

"No," she said, opening the door. There was a woman standing there. They knew her by sight, of course, but not personally. "Yes?" said Fran with a welcoming smile.

"Hello," said the woman nervously. "I hope I'm not disturbing you."

"Not at all," said Fran, stepping back to invite her in.

She entered, smiling a little stiffly. When she reached the entrance to the first living room she stopped and gasped. The colors didn't show in the daytime, but the ceiling still glowed. And the view was impressive. "Oh," she said, "I love what you've done with this room," and she and Fran were off. Elgin waited patiently.

Finally the small talk ran its course and the woman got around to the point of her visit. "I heard," she said, "that only one of you won the lottery."

"Yes, that's right," said Fran. "I won and Elgin didn't."

"Well, that's why I came over." She produced her lottery ticket. "My ticket is a winner," she said, "but my husband didn't win either and I don't really feel like going without him."

Fran said, "I understand that." She looked at Elgin, who nodded.

"So," said their guest, "we talked it over and decided that the best thing would be to give my ticket to you so you two can go together."

Fran and Elgin were surprised and pleased. "That's really kind of you," said Elgin, "but why should you miss out on it? We could just as easily give you ours so you and your husband could go together."

She looked at him as if he were crazy. "What would be the point of that? No, it has to be you two."

Fran stopped Elgin from replying and said, "I can't tell you how much we appreciate the gesture, but it's too late. I already gave away my ticket."

The woman stared, speechless for a moment, then bid them a hasty goodbye and left.

"You gave it away?" asked Elgin. "Already? When did you have time to give it away?"

"I haven't actually given it away yet," said Fran, "but I'm planning to."

"You were planning to give it away?" Elgin couldn't help but smile. "Just because we couldn't go together?"

"Yes, of course," said Fran. "Otherwise, as the lady said, 'What would be the point of that?'" They chuckled, then Fran said, "In truth, I didn't have a definite plan until she came. I just knew I wasn't going alone."

He held his arms out. "Come here." While they cuddled, he asked, "Who were you going to give it to?"

"I'm thinking Maria," she said.

"Perfect." He gave her a squeeze.

The woman with the winning ticket hadn't just given up and gone home. She wasn't defeated, merely delayed. Since one ticket wouldn't be enough, now she set about arranging for two. She contacted all the other winners and invited them to enter another lottery. This one would have two winners who would have the privilege of giving their passes to Frances and Elgin. More than two hundred people pledged their tickets for the draw and the winners were heartily congratulated by their envious co-conspirators. This time it was a delegation of three that visited the apartment.

"Hello," said Frances, showing them in. The woman introduced her companions before showing them the view and giving them a mini-tour. "It's nice to meet you," said Fran and Elgin.

She wasted no time getting to the point. "These are the winners of the second lottery," she said. "They won the right to give you their tickets." The two held them out with triumphant gestures.

"What?" said Fran, glancing at Elgin who raised his eyebrows. "The winners lose their passes?"

"Yes," chorused the three, laughing at their harmony. One of the winners was another woman, the other a man. They looked at each other, grinning gleefully. The original woman said, "Yes. There were over two hundred entries, and these two won." They swelled with pride and happiness. "You must take them," she concluded, while the others thrust them out again.

Fran and Elgin looked at each other and shrugged their shoulders. "All right," said Fran, "if you're sure." They all vigorously assured her and the tickets changed hands. It was a very happy moment, except the woman had a slightly bitter-sweet expression. Fran subtly took her aside for a talk while Elgin entertained their other guests. Rejoining them, the woman's face was practically beatific. When the trio left they were all very pleased with themselves.

"What did you say to her?" asked Elgin. "And why did she have that look on her face?"

"She was sad," said Fran. "Of course she was happy about arranging all this, but she was sad that she wasn't able to give away her own ticket, which is what she wanted to do."

"So, what did you say to make her feel better?"

Fran smiled, congratulating herself. "I just told her about a little girl who has a winning ticket, but whose father, a single dad trying his very best in a tough situation, doesn't." Elgin was grimacing at the melodrama, and she grinned. "She couldn't wait to get out of here so she could go give them her pass."

"Maria?"

She nodded.

"And does she really have a single dad?"

"Yes," said Fran, losing her smile. "And it really is sad."

Elgin nodded. "I guess you're not so bad then. But really, you have to admit it was a little over the top."

"Oh yes. More than a little." She struck a pose. "And I'd do it all again," she said, her chin up defiantly, her mouth struggling with a mischievous grin.

He laughed and so did she. Then he said, "I always knew you were the smartest woman in the universe."

"Thank you," she said demurely.

"I just have one question."

"Yes?"

"If neither of us had won, would you still have found a way to get tickets for Maria and her father?"

"Most likely."

"That's what I thought." He added, "And if we both had won, we would have given our tickets to them wouldn't we?"

"Possibly," she said.

"Possibly?"

She squirmed slightly. "Okay," she said, "I might have brought it up." Those brown eyes kept looking at her. "All right," she admitted, "I probably would have asked you."

He couldn't keep the stern stare going for long. "And you know I would have said yes," he said, scooping her into his arms. Looking down into her eyes, he told her, "Because you're smarter than you need to be."

"Oh, I don't know," she murmured. "I think I'm going to have to be pretty smart to keep a good man like you."

In the final few days, the comet became a pretty quiet place. All unnecessary activity was curtailed to minimize the variables that needed to be watched. Everything was battened down and shipshape, ready for the joining. Maria and her classmates had helped Elgin set up the cameras at the swimming hole and now everyone was waiting. Everyone except Buzzard, that is. Buzzard kept gathering data and doing calculations until the last day.

The official plan prioritized the contact zones of both comets and those areas were exhaustively analyzed so they could predict what would happen. After that they did a thorough job on the facing hemispheres. Even though they had determined that no significant effects would propagate that far, they still did the work because that's how far their settlement was from the point of impact. But Buzzard didn't stop there. He analyzed the full surfaces and the complete volumes of both comets. Stanton knew it wasn't required, but he didn't interfere. It wasn't hurting anything and if it made Buzzard happy, then let him do it.

On the last day Buzzard handed a piece of permapaper to Elgin. It was one concise block of calculations. Elgin could see that it was a distillation of everything into a one page summary, and he could see that it was right. It was solid and compact and perfect, like a diamond shaped by a master cutter. Its music was composed of pure tones in perfect harmony, and that's what he told Buzzard.

"Are you sure?" asked Buzzard. "All done? Is it all done?" He was looking at Elgin with an oddly penetrating eye. With his crazy grin barely in check he asked, "All done? All good?"

Somewhat unsettled, Elgin looked at it again, this time stepping through it more deliberately. It still looked good. He could see nothing wrong with it. His instinct was functioning normally and he confirmed that it was right.

Buzzard thanked him and took back the paper, his face wrapped in a sly, happy grin that would not go away.

Chapter Twenty-Nine – The Joining

Stanton's bubble was a lively place on the day. Exactly two hundred twenty people were in there waiting for contact, and they were in a festive mood. Elgin and Frances were with Maria and her father, Tomas, who was saying, "I know I've said it before, but I'm going to say it again. Thank you for everything you've done for Maria." He looked at his daughter, who was there at the same level as the adults. Microgravity has unexpected advantages. "You've done so much for her." Tomas was including both of them, but he was obviously talking to Frances. "And your kindness to her is a kindness to me."

Elgin nodded, accepting it for what it was. He didn't feel he'd done much, but that didn't mean it wasn't important to Tomas. Fran spoke for both of them, saying, "We're happy to do it, Tomas." She looked at Maria, who was on the verge of rolling her eyes at this adult stuff. "Maria makes it easy to do. You've raised a wonderful daughter." Now the eyes did roll. Fran laughed and so did Tomas.

"What's going on?" Their communicators piped up. It was the lottery woman and the two winners, who were connected to them for the event. Along with her husband, they were in the Square watching it on the big screens, and they had a private connection with the four people they'd sent to the bubble. "What's so funny?"

"Nothing," said Fran. "Maria's just telling us to stop acting like grownups."

Tomas interjected. "Thank you again for the ticket. It means a lot to be here with Maria like this."

"Never you mind that," said the woman gruffly. "It meant a lot to me to see my ticket get used. Used well. Oh, you know what I mean."

"And me too," said Maria. "I mean, I'm glad my daddy's here too. Thank you."

"And of course," added Fran, meaning to thank the other two for their tickets, "oh . . ."

"What?"

"Oh, I'm sorry," said Fran. "There's someone outside the bubble in a pressure suit."

"Who?"

"I don't know, but they seem to be looking in here."

"What are they looking for?"

"I don't know. They . . ."

"Buzzard!" cried Maria. "It's Buzzard!" Others took up the call, especially the other children in the bubble. They were waving and laughing and calling his name, and they all rushed over to the curving shell closest to the figure outside. Even in a pressure suit, Buzzard was recognizable by the way he moved, by the way he flew. These kids, who watched him play flashball, who idolized him for his unique style, were now inside the sphere while he was outside. He waved and did some swoops for them, provoking cheering and more excited laughter.

Elgin got over his surprise. He realized that Buzzard must be looking for them, so he started waving both wings over his head until he caught his attention. When he spotted them, Buzzard reached up and tapped his ear, indicating he wanted to talk. Elgin found the right frequency and said, "What's up? What are you doing?"

"Taking some pictures," said Buzzard. "Pictures. I'm going to take some pictures." He held up a bulky camera.

"But, you didn't have to go outside to do that." Not only were there plenty of cameras already deployed for the event, fixed at many strategic locations and flying in the space around the contact point, Buzzard could have easily requisitioned more and put them wherever he wanted.

"Gotta take these myself. Out here. Myself."

"Then, why didn't you get a little excursion pod? You could go out there and be safer and more comfortable. You could take all the pictures you want."

"Too crowded. Too cramped. Not enough room to move around." Buzzard did a couple of swoops and the kids cheered.

Elgin understood. He hated to see his friend taking more risk than he had to, but he knew why he had to do it that way. "Okay," he said, "I get it. But you just be careful, alright?"

"Careful. Be careful. I'll be careful." Buzzard waved and turned around, then began moving directly away from the comet. He rapidly shrank in apparent size, then disappeared.

Elgin and the others watched in silence as he went, but Maria broke it when she came back from the crowd of kids. "That was so cool," she said. "Buzzard is so cool."

"Yes he is," said Fran. "We all think so, anyway."

"Everybody thinks so," Maria insisted.

Elgin couldn't help himself. He got on the radio and called Buzzard again. "Buzzard? Sorry to bother you, but could you call once in a while to let us know you're okay?"

"Okay," came Buzzard's voice, just as loud and clear as it was when they could see him. "I'll call. Call some more. Already calling Stanton. Already."

"Oh, okay. If you're already calling, then don't bother."

"I'll call you too. Call Stanton. Call you. Same time."

"Right, okay," said Elgin. "We'll wait for your call, then." He looked at his companions and shrugged. He didn't need to relay what had been said because they all, the four here and the four in the Square, were sharing their communications. So Elgin shrugged and grinned, shaking his head. "That Buzzard, eh?"

"I wonder why he needed to go out personally like that," Fran said. "Maybe Stanton knows." She called him, but he didn't know either.

"I know it's something special," he said. "Buzzard couldn't stop grinning while he was telling me. But he wouldn't tell me what it was."

"Oh well," said Fran, "it was worth a try." She added, "Say, are you with anyone?"

"No," said Stanton. "I never thought about it. I just assumed I'd be with you guys. And Buzzard, of course. So here I am on my own."

"Would you like some company?"

"Sure, I guess, although there's no shortage of people here."

She could hear the smile in his voice. "You know what I mean," she said. "Hold on a minute." She called the lottery woman and her party. They said they'd be glad to have Stanton join them, so she filled him in on their story. "They'd be honored to be in the company of the man who's responsible for this whole thing."

"Okay," said Stanton. "How do I find them?"

"They know what you look like. Just fly up above everybody and they'll spot you."

After a brief pause, Stanton said, "I'm up here but there's a lot of bodies down there."

"They say they're toward the red end, closer to the orange side."

"Ah, there they are. They're waving."

"Good. We're sharing a comm frequency so we'll all be able to talk when you get there." When she looked at Elgin, he was smiling one of his proud smiles at her. Tomas' eyes were shining and Maria looked as if she had just learned something important. "What?" she asked.

"Oh, nothing," said Elgin, sharing a look with Maria and her dad. "Anyone would have done that, right?" They agreed equally facetiously. He gave Fran a wink, then he checked the monitors at the back of the bubble. It was less than a half hour to contact.

There was a countdown of course. Some people started at one minute, others at thirty seconds, but the majority came in at ten seconds. They all shouted “zero” in unison, then there was a collective holding of breath. All through the Square and the bubble, people were poised in poses of anticipation, their faces showing excitement, anxiety and even fear. Even though they knew rationally that there was insignificant danger, for some there was that grain of doubt. They could be wrong. This might be a horrible mistake, and the coming moments could hold destruction and death.

Reality was anticlimactic. Nothing seemed to happen for the first few moments. The monitors showed the two comets sinking into each other. Clocks ticked off the time. Dials tallied up the distance. But there was a lack of any physical sensations. Long after they had all begun to breathe again and conversation had recommenced, there was still nothing to see or hear.

Finally the monitors showed the snow beginning to rumple up visibly ahead of the growing circle of contact, provoking a relieved roar of chatter. Then, for those who were paying attention, there was an almost undetectable motion. It was so small that most people didn't notice it, simply compensating for it automatically, but those who were expecting it or who were more attuned to the subtleties detected a slight tendency to drift forward. Their comet was slowing down due to the collision but their bodies continued moving at the same speed. The result was an apparent motion relative to the comet of well under a meter a second. It was very easy to miss by unconsciously adjusting with small wing flaps.

The noises started with a distant thump. It was quiet, to the point of being subliminal, and more felt than heard. It was followed by more, with a trend toward increasing intensity as the comets plowed more deeply into each other. The compression between them wasn't smooth, rather building and releasing in a series of seismic events. It happened more frequently as the collision progressed, until the noise became a steady roar and people made sure their hearing protection was in place.

Elgin didn't know when it started, but everyone was looking at the monitors now, especially one showing the back end of the small comet. The area was illuminated by some strong floodlights and they could see the surface clearly. Something appeared to have lifted off of it and was rising away. Elgin instinctively glanced up but he couldn't see anything with the bulge of the comet in the way. “Floodlights? There?” muttered Elgin. “When did that happen?”

He was talking to himself but Stanton responded. “That's what I'd like to know,” he said.

“You didn't know about them?”

“No,” said Stanton. “I knew he was up to something, but he wouldn't tell me. And he must have sworn everyone who helped him to secrecy.”

“You asked around?”

“I sure did. I wanted to know what he was grinning about.”

“He grinned at me, too,” said Elgin. “When he showed me his summary page, he couldn't stop grinning. It made me feel as if there was something I missed, but it was all right.”

“Same here,” said Stanton. “I don't have your talent, but it all looked fine to me, too.”

There was an awed gasp from the people watching the monitors. When Elgin looked it took a moment to see what he was looking at, and then he couldn't believe it. The material that had been rising off the surface before was coalescing into a definite shape, and it was fantastic. Instead of just a cloud of snow puffing off the comet, it now appeared to be forming into a toroidal object. In a few more seconds it clicked over from an impression to a certainty. The image that popped into Elgin's mind was of a smoke ring. There was a smoke ring rising off the back end of the small comet where someone, most likely Buzzard, had arranged for floodlights. And now he was out there in a pressure suit taking pictures with a hand held camera.

“That bugger,” said Stanton. “He knew this was going to happen. That's why he was grinning.

He knew and we didn't."

As one, Elgin and Stanton recalled Buzzard's paper. Now that they knew what to look for, it was right there. The interaction between the faster shockwave going through the center of the comet and the slower one going around the outside was almost certain to blow off material, and there was a chance it could form this ring.

"That bugger," said Stanton again, and you could hear the pride in his voice.

The ring continued to rise away, and it seemed to continue to get more clearly defined as it rose. They could see its rotation, although it was slow. It was curling in on itself, the constant motion keeping it wrapped together.

Then Buzzard called. "Switch to my camera," he said. "One of the monitors. Switch one to my camera."

"I've got it," said Elgin. The monitors in both places were showing the same things, so changing one would change them both. He chose one that wasn't showing much and switched it over to Buzzard's feed, provoking another gasp and a swell of excited conversation.

Buzzard must not have flown all the way around the back end of the small comet, because his point of view showed the smoke ring just becoming visible past its limb. He must have been only about twenty kilometers out because they could see a lot of the small comet and one edge of the smoke ring, which was slowly coming more into view. "See it? Do you see it? Can you see it?" said Buzzard, his voice clotted with suppressed chortling.

"We can see it, Buzzard. You're coming through fine," said Elgin.

"It looks great in the Square, too," said Stanton. "Congratulations Buzzard."

There was another commotion as people spotted more material lifting off the surface and Buzzard, who must have been monitoring it in his suit, opened his comms again. "There'll be more. More smoke rings," he said before laughter took over his voice. He tried to speak several times, but couldn't, so he switched off.

But the second one wasn't a ring. It was just a disorganized puff of snow, as were the next few. And the first one wasn't a perfect ring after all. It wasn't exactly circular and it was thicker on the near side than it was on the far side, where it thinned to near invisibility. It still looked good, though, as it emerged from behind the comet. And over the next hour several more rings did form, though none of them was as big as the first one and most of them were even less well formed. But there was one that was nearly perfect. Toward the end, as the puffs were getting weaker and farther apart, one clear, circular one rose up and sailed away. The people all cheered and applauded and Buzzard's immortality was assured.

The roar of the joining had reached a peak and was diminishing. Buzzard's camera had recorded his last smoke ring coming out from behind the comet. Elgin said, "I think that's it, Buzzard. You can come back in now."

While Buzzard made his way back, the roar continued lessening until it became discrete noises again, and those got quieter and farther apart. They did get to see the rumple line spreading out on the small comet, but not on their own. It never did reach their horizon. There wasn't much more to see from the bubble, so people started making motions to leave. They might as well spend the rest of the day with everyone else in the Square. But as they began to move toward the door, the children protested that they didn't want to go yet. Even though they had been cooped up in there for hours, the kids didn't want to leave until Buzzard got back.

When he appeared they cheered and rushed over to the outer wall again. Once he was visible it only took another few minutes to get there. He flew right up to the bubble, holding his camera over his head like a trophy while the children laughed and applauded. He did a few swoops for them and then headed off for the entrance. Then the kids were ready to leave, and they poured out into the hallway,

talking loudly and practicing Buzzard swoops.

Flying back to the Square, Elgin was quiet. Fran flew silently beside him for a while, but eventually she asked him, "What's up?"

His eyes came back to focus. He didn't realize it, but he'd been flying automatically, just like the man in the corridor on the first day Stanton took him out. "Nothing," he said. "I was pretty worried there about Buzzard. It surprised me."

"Me too," said Fran. "My heart was in my mouth." She touched her lips, remembering.

"Yeah. If he'd said something, there'd have been time to get used to it." Elgin shook his head in wonderment. "How did he manage to keep it secret? Something that spectacular?"

"Are you talking about his excursion now, or his smoke rings?"

Elgin flew silently for a few tens of meters. When he spoke it was in confessional tones. "I think you've hit the nail on the head, Fran. It's really the smoke rings that are bothering me."

"How so?" she asked. "You're not envious, are you?"

"Oh, no! I'm proud of Buzzard. Nearly as proud as Stanton."

"That's pretty proud," she said with a grin.

"It is," he said, "but it's true." His smile faded and he said, "No, I'm ashamed to admit that it bothers me that I couldn't see the smoke rings coming."

"But you're not the only one. Not even Stanton saw it."

"I know, but nobody else has my talent. I should have been able to see it coming." He looked at her, astounded. "He showed me his work, and I still didn't see it."

She flipped around and coasted backwards so she could look right at him. "But you knew that it was right, didn't you?"

"Yeah, but . . ."

"You knew," she insisted. "That has always been your talent."

That brought Elgin up short. He stopped flying and hung there, a stunned look on his face being gradually replaced by revelation and relief. Fran had drifted on when he stopped, but she quickly fluttered back to him. He hugged her, then held her at arms' length, beaming. "You are definitely the smartest woman in the universe," he said.

"That, of course, is highly unlikely," she replied, "not least because you haven't met all the women in the universe."

"I don't have to meet all the women. I already know that you're the smartest, so I don't need to waste any more time looking."

She was blushing and smiling happily. "That's irrational," she said, "but I'll let it go for now if you tell me what I said that was so clever."

"You reminded me what my talent is," he said enthusiastically. "It's for knowing when something is right." He clapped his hands sharply. "And that's it."

"Yes?"

"Well, I was falling into the trap of thinking that it meant more than it does." He brushed it away. "Knowing when something is right doesn't mean always being right. It doesn't mean knowing what's right and wrong." He grabbed her by the shoulders. "And it doesn't mean knowing what's going to happen." If there'd been gravity, he'd have danced for joy.

"Speaking of being clever," she said, "You're pretty smart yourself."

"Only because of you," he said. "Thanks to you, I've got my feet back on the ground." They both glanced down, then laughed. "Thanks to you, I know my talent is still okay. I can still be useful to the comet."

"There's a lot more to you than your talent," she said sternly.

"I know," he said, starting up again. They flew down the corridor holding hands. "There must be something, to keep you hanging around. I just hope I don't lose that."

"You're about as likely to lose that as you are to lose your talent," she said, squeezing his hand. "It's as much a part of you as your blood and your bones."

He squeezed back. "You say it and I know it's right."

When they got to the Square it was roaring with conversation. It was tempting to put their hearing protection back on, but it wasn't that bad. They soared up to a good vantage point and looked for Stanton's group in the red-orange corner. They must have been waiting for them because they started waving right away, so Fran and Elgin flew down to join them.

"What took you so long?" said Stanton.

"Yeah," said Maria. "We've been waiting for ages."

"We had a bit of a revelation," said Fran. When Maria looked at her quizzically she added, "Elgin was afraid he might have lost his talent." She looked at him to make sure he didn't mind, then went on. "It turned out that he hadn't lost it, only forgotten exactly what it is. Now he remembers and it's okay again."

Maria nodded but it was plain that she didn't completely get it. If she was going to pursue it further, it was interrupted by a rapid series of bangs that stopped conversation throughout the Square. A short silence was followed by a spate of nervous laughter, then the talking quickly built up to a roar again. "How much longer is it going to do that?" she asked.

Elgin was going to answer, but Stanton beat him to it, explaining that they could estimate how long it would go on, but that they couldn't say for sure when it would stop. "We estimated that the whole thing would take three hours," he said, "which means that it should be over about now." Maria nodded. "But we can't say whether or not this was the last loud one. It could be, or there could be more."

"So it's kind of like the stuff about probabilities that we're learning in school," she said. "Effay, probably three hours?"

"Yes, that's right," said Stanton. "As a first approximation it will last three hours, but there is an uncertainty that keeps us from setting a definite time."

Tomas interjected. "It's really two different things, isn't it?" He was slightly abashed when everyone looked at him. "I might have misunderstood," he ventured, "but I thought the three hours was for the comets to come to rest. Then it said that there could be settling in and so on for an indefinite period." He looked at Stanton for enlightenment.

"No," said Stanton, "you've understood perfectly. In fact, I thank you for reminding me. The three hour collision time and the indeterminate period of seismic activity should be looked at as two separate things." Maria was looking proudly at her father, and smiled happily when Stanton told him, "This is the kind of trap that we have to work hard to avoid in our job."

Stanton cocked his head, gazing into the distance. "Excuse me," he said, "it's a status report." He turned away from the group to be polite.

Just at that moment a cheer went up from all the children in the Square. Buzzard had entered and swooped up high, and was turning around scanning the crowd. He was obviously looking for them but he was distracted when all the kids, including Maria, went flying up to join him. They surrounded him in a loud, happy ball that gave brief glimpses of his delighted grin. Finally he flew out of the mob and led them off around the upper reaches of the Square. They quickly formed a single file, following Buzzard and mimicking his every move.

"Hey," said Elgin, "that's what they did with me at the swimming hole."

Stanton said, "They look like a flock of little ducklings following their mother."

Then, as they were traversing the far, yellow end, Buzzard pulled up and the flock gathered around him. They huddled there for a while, looking at the yellow column closest to Fran and Elgin's rooms, then Maria peeled away and came flying back to them at full speed. She was excited and stammering when she got there.

"Whoa," said her father. "Take a breath and rein that horse in."

Maria visibly got a grip on herself, then reported succinctly, "The column is cracked." She looked at Fran. "The one by your apartment. It's got a crack right through it."

They all followed her back over, and every kid there wanted to be the one to point it out to them. They had to get quite close before it was obvious as a crack. From a distance it was easy to dismiss it as a trick of the light, but up close it was definitely a crack. That's all it was, though, just a crack. There was no displacement in the pillar itself, which still looked straight and true.

Everyone ran their hand over it, but they couldn't feel any discontinuity. Stanton, ever the engineer, soundly smacked the ice on both sides of the crack, but it was solid.

The lottery woman said, "Can you fix it?"

Stanton looked at it, tipping his head one way then the other. "I suppose we could," he said. "We could inject water into the crack and make it less obvious."

"Less obvious?" she said. "Can't you fix it like it never happened?"

"No," he said. "These columns are grown in a continuous process. No matter how well we hide the crack, it will never be the same."

"Oh," she said. "Does that mean replacing the whole thing?"

"I'm afraid so," he said.

There was a lull while they contemplated the size of that task. Then Fran cleared her throat. "There is another option," she said. Having their full attention, she said, "We could just leave it."

That raised a small wave of surprised comments. The lottery woman summed it up with, "Wouldn't that be dangerous?"

Fran looked at Stanton who said, "No, not at all."

She was incredulous. "But it's cracked!" she said.

"Yes," he said, "but it's still sound." He smacked it again. "Any repairs would be purely cosmetic." He could see that she wasn't convinced by the way she was doubtfully eyeing the length of the massive pillar. "Look," he said, "it's not as if it's holding anything up." He raised his eyebrows, smiling.

"Oh!" said the woman, remembering. "Of course." Even as she was floating in the air she still instinctively assumed there was gravity, especially when looking at this kind of sturdy architecture. She still had a question, though. Looking at Fran, she asked, "Why would you want to leave it cracked anyway?"

Fran hadn't got that far yet. All she had was a feeling that it would be a good idea. She quickly asked herself the question and came up with a couple of answers. "For one thing," she said, "it would be a reminder of the amazing thing we did today."

That was greeted by general, if unenthusiastic assent, but it wouldn't be enough to convince any doubters. The woman asked, "Is there anything else?"

"Yes," said Fran. "Because this is the yellow end, it can be kind of symbolic."

"Symbolic of what?"

"That would be up to each person," said Fran. "Most of us lost someone to Yellow Comet, or know someone who did. And we all have feelings about it." She swept her hand, taking in everything. "This is Yellow Comet, when you come down to it. I think this crack could be a reminder for people."

"A tribute to the people of Yellow Comet. Okay, I see it. But what makes leaving it damaged a better tribute than repairing it?"

"Either would be a good tribute," said Fran. "In many ways, repairing it might be the better one. I just have this feeling that a visible crack might be more poignant. A reminder of the fragility of everything, that nothing is perfect. And it could serve as a sort of touchstone if it's right here, visible and accessible."

This time the general assent was more pronounced. Heads were nodding among the adults, while most of the children were simply waiting for whatever the decision would be. Stanton spoke it for everyone, his voice a little husky with his personal Yellow Comet memories. "I think it's a great idea," he said. "It will be nice to have someplace to come to remember." It was clear he was struggling with his emotions and it proved to be contagious. The adults were quiet for a few moments, a few brushing away tears, while the children looked on, mystified.

Stanton cocked his head again. "Go ahead," he said, but everyone knew he was talking to someone else. "Okay. Good." He was nodding. "Where?" he said, a small frown starting. "Are you sure it's in the gallery? Okay, keep a crew on that until you track it down." His expression cleared. "Good job. Let me know," he said, ending the call. He looked around at his companions, his mind still elsewhere.

"What is it, Stanton?" asked Fran. "Is everything all right?"

"Yes," said Stanton, coming back. "Yes, everything's okay." He looked at Elgin. "That was the head of the damage patrol. He says your struts held up fine."

"My struts? On the flashball court?"

"Yes. They haven't found any serious damage anywhere. Only a few slow leaks that they're patching now. Except there's one in the flashball gallery that they're having trouble isolating."

Everyone thought about it, then Elgin said, "That gallery doesn't have a contiguous ice seal, does it?"

"No," said Stanton. "Parts of it are just packed snow."

Elgin nodded. "Maybe a rift developed behind the surface. That could cause a diffuse leak that would be hard to pinpoint."

"Right you are," said Stanton, turning away to make a call.

People were looking at Elgin, some with worried faces. He quickly said, "There's no danger. They'll seal off the gallery and fix the leak."

Maria spoke up. "Elgin?"

"Yes?"

"Do you think we could look at the video of the swimming hole now?" The kids close enough to overhear said, "Yeah!" and that attracted the others, who crowded around.

Elgin said, "Right. Everyone's here now, hey? I think this is a good time to do it." The children cheered and Elgin selected one of the smaller monitors and called up the swimming hole recordings. "I think we should run it at high speed," he said. "It's too close to bed time to watch it in real time." Even sped up sixty times it was slow for the children. It took a while to even be able to see that the sphere of water was moving, but once it did it was worth the wait.

There's something intrinsically funny about a big blob of water wobbling and splashing about. The kids were laughing anyway. And each time a big slosh was impending, they held their breath with anticipation and released it explosively, laughing at the antics of all that water. There was a sense of satisfaction and disappointment as the action wound down.

"Play it again." Elgin wasn't surprised to hear that, but he was surprised that it came from behind him and not from the kids. "Yeah, and put it on the big screen," came another voice. He turned around and found that a lot of the people were looking his way. More voices called out for a rerun and someone started chanting, "Swimming hole," which caught on right away.

"Okay, okay," said Elgin, putting his hands up in surrender. He switched the feed to the big

screen, the view from behind, where they could see the sphere move away and into the far wall. He put the other angles on some smaller screens. There was a round of applause and soon everyone in the Square was watching. Next to Buzzard's smoke rings, this was the big hit of the whole affair. When it ran down and the crowd demanded he start it over, Elgin complied, sharing a look with Maria. She looked proud and happy.

Fran slid her hand into his. "I don't know about the rest of you," she said, "but it's been a long day for me."

Tomas agreed. "What a day it has been, too. Thank you again everyone." He held out his hand for Maria. "Good night all. See you in the morning."

Chapter Thirty - Annihilation

Elgin awoke to beeping. While he was trying to figure it out, Fran bolted out of bed and shot through the door into the kitchen. He tore after her and found her at their terminal. “What is it?” he asked, wondering if he should be worried.

“It's the planning committee alert system,” she said. “There's a message from Winston.”

Elgin didn't ask what it said. He knew she'd tell him when she'd read it. It wasn't easy waiting, though. His mind filled with questions, mostly about the joining. Could they have overlooked something? Was there a disaster unfolding as a result of crashing the comets together? Would they pay a horrible price for their hubris? Their arrogance?

“Winston has called an emergency meeting,” she said. “He wants everyone there immediately.”

“What's it about?”

“He doesn't say. He wants everyone together first.” She sent a return message saying they'd be right there. “Come on,” she said.

Elgin headed for the bathroom. “Wait up,” he said, “I've got to go pee.”

“It's a good thing we've got two bathrooms,” she said.

They left by the balcony, diving off and flying straight to the exit they wanted. There was no one around. It felt strange crossing an empty Square. They felt almost furtive going up the corridor to the meeting room. Entering, they found Winston seated grimly at the table, with Nigel “pacing” before it. They were the only ones there so far.

“What's going on?” asked Fran. She got a shrug and a head shake from Nigel, so she turned to the seated man. “Winston?”

He looked up and his face shocked her. She had never seen him like this. He looked shaken, frightened and uncertain. He croaked weakly, “I can't tell you until everyone is here.” His voice made her shiver and she went to Elgin for comfort.

The scene was repeated with each new arrival, until Frances saw how hard it was on Winston and stepped in to deflect people away from him, earning herself a look of gratitude. Not only committee members were coming. It looked as if Winston had invited the heads of all departments, too. Stanton was among the first to get there and he came over to Fran and Elgin, looking for answers. He already knew it wasn't a problem with the comet. At least, nothing to do with the joining. He'd stayed up half the night getting reports from the damage patrols, and the comet was in good shape. They'd even sealed the leak in the flashball gallery. So he was as much in the dark as everyone else.

The room was crowded when Winston stirred, cutting off a buzz of conversation like a cleaver. They looked at him, their senses open, amplified by apprehension. “Please sit down,” he said, and the committee members took their usual places at the table, Fran leaving Elgin and Stanton standing together. One of the department heads, not used to the procedure and no doubt fueled by anxiety, started talking, his nervous chatter escalating as he demanded answers. Winston didn't raise his voice, merely said, “Be quiet, please,” and the questions stopped, leaving a chill in the air.

He stared at the table for many long moments, but they remained quiet. Finally, when she could see worry threatening to become fear and panic in many of the faces in the room, Fran gently laid her hand on Winston's arm. He looked into her eyes and was bolstered by the calm compassion there. He nodded and cleared his throat, straightening himself in his chair. He looked around at his audience, and said, “About an hour ago we received a radio message. It's from the envoy, sent by their high power omnidirectional transmitter.” There were some gasps, but mostly only silence. Everyone knew the

envoy, on its way to meet the Visitor, communicated with a directional antenna pointed home. They also knew that most space vehicles and occupied comets had similar setups, with an emergency backup, high powered and omnidirectional. "I think it's best if we just listen to it."

He played a clip, about a minute long, of normal reporting by the envoy. It was describing what they could see of the Visitor, then the quality of the transmission changed, becoming more powerful and rougher. After the final statement, "They're attacking us!" Winston let everyone absorb it in silence.

Someone spoke aloud what they were all hoping. "Are there any more messages?"

He responded in the deepest croak anyone had ever heard him make. "No," he said. "That is the last thing ever heard from them."

"Then, what's going on? What are they doing about it?"

"In the last hour there has been some confused radio traffic, but no one has said anything official yet."

"Then let's call them. Let's find out what's going on," said someone else.

Winston shook his head. "It would be most of a day before we got a reply. There's no point." His face went stony. "I've ordered radio silence." He rode out the gust of shocked protest. "At least temporarily," he said. "Until we know more." He quashed further protest with a flat statement. "It is my right to do so. It is the responsibility of this chair." He made sure to include everyone as he swept them with a hard stare. "The Visitor attacked and killed the envoy without provocation. Until we know more, we will do nothing to give ourselves away."

That was a good decision. The next few months proved that. Winston held firm in spite of the impassioned wheedling of people who desperately wanted to call home. As time passed and nothing further seemed to be happening, some even tried to convince themselves that it was a mistake, or possibly a hoax. If the self-deception threatened to get out of hand, or if he tired of the clamor, Winston would just play the message again, on the public address system if necessary.

Eventually he was vindicated, much to his dismay. By then the people who wanted to use the radio were trying logical arguments. They would point out that they were separated from the Visitor by at least forty-five degrees relative to home. And Green Comet was well above the ecliptic outbound, while the Visitor was inbound, slightly below the plane of the planets. Surely a tight radio beam into the inner system wouldn't give them away. Fortunately for Green Comet, Winston held firm.

After many months of random radio traffic full of speculation and devoid of any new information, the inimical nature of the Visitor began to be confirmed. Astronomers continued to report flashes of light similar to the ones that revealed the Visitor in the first place. But now they were joined by others, smaller but more numerous. They surmised that these were indicators of more smaller craft, such as the one that had been observed to separate from the main vessel before attacking the envoy. They calculated that they would be plunging into the inner system at nearly double the speed of the big one, traveling much faster than anything that could be put up against them.

These modules had their own offspring that could be deployed and accelerated on independent vectors. The strategy seemed to be to go to the sources of any radio transmissions, the more numerous or powerful ones first, and destroy them. There was no attempt at communication, and there was only one response to any challenge or plea: destruction. The result of any attempt to talk to them was certain death, so radios began to go silent for stealth as well as from obliteration. The result of any attempt to fight was futility. None of their ships could match the speed of the attackers, and anyway, they were built for exploration, not combat.

The defenders had only one brief rally. Their ships couldn't do much against the enemy's speed and power, but even those cold, silent killers couldn't outrun a particle beam. They managed to destroy

some of them, but it made no difference in the end. It was a simple matter to find the sources of those beams and systematically erase them. There didn't seem to be any concern for the losses incurred to do it, either.

There followed months of chaotic, terrible radio traffic as the Visitor spread through the system killing everyone it discovered. It was always the same ending no matter how it started. Whether the people stood up to them or not, whether they begged for their lives or not, whether they tried to reason with the implacable killing machines or tried to hide from them, the end was death and another silent radio source. In most cases there was a final panicked distress call, a death cry expanding pitifully in the lonely vacuum before being abruptly cut off.

The destruction of their planet was painful to the point of disbelief. The people put up a good fight. They destroyed an appreciable number of the marauders before succumbing. Perhaps most importantly, they compiled information about the Visitor. They took all reports from anyone who encountered the ships and rebroadcast everything they learned, hoping that something would help someone survive. Green Comet learned a lot that way. Every sacrificial broadcast, each a heroic act given the certain outcome, added a little more information that Green Comet could use in its own survival.

Even though they were far from the horror in the inner system, with no reason for the Visitor to come after them, events conspired to put them in the invader's sights. Red Comet was on the inbound leg of its orbit, inside its descending node, well within the inner system. Even though it tried to go quiet and hide from the deadly onslaught, it was discovered and destroyed. Worse, the Visitor now knew that people were living on comets, and it was easy enough to follow their trails.

The final assault on the planet displayed the callousness of the Visitor in its ultimate form. Once all significant resistance was eliminated, there were no more explosives or energy beams. There was no landing of troops to mop up. Instead, the atmosphere was drenched with poison, and when it dissipated it was drenched again. It was less like a weapon of war and more like a pesticide. The Visitor was not defeating its enemy in a war so much as eradicating vermin. The planet was being sterilized.

Finally there was silence. No more cries of fear and outrage came out of the inner system. All the heroism and tragedy that had emanated from their lost home went quiet. The many months of futile struggle against a silent, enigmatic killer were over, and still the people wanted to understand. They wanted to know why. Why had the Visitor come across interstellar space to destroy them? And why had it never talked to them, never answered their increasingly desperate entreaties?

Chapter Thirty-One - Communication

Green Comet was a dark place, and cold. They hadn't touched the environmental controls. No one had turned down the lights. It was just colder and darker. It was a quieter place, too. There were no voices calling out across the Square. No children shouting and laughing. When people spoke it was quietly, and no longer than absolutely necessary. The cold and darkness in Green Comet were coming from inside the people.

There was one suicide during the extermination of their species. It happened before the poisoning of the planet, while it was still possible to hope. Someone abandoned hope before it was gone and escaped into death. There were a few more suicides after the planet was sterilized and then a small wave of them as the horrible reality sank in. It began to look as if it would become a trend. People who might have been merely morbidly depressed were seeing other people kill themselves, and deciding that it must be a viable option.

Frances and Winston saw the developing trend and moved to cut it off before it turned into a self-supporting system. They spoke on the public address system. They spoke at the funerals of the suicides. They eulogized their martyred planet and included the suicides among the victims of the Visitor. They tried to turn minds away from the horror, away from the past and onto the future. That was all they had now, and their only option was to go on, to survive. They needed to be strong to defy the brutal intentions of their heartless destroyer.

The suicides stopped at thirty-one. Given the circumstances, thirty-one out of two thousand was probably not bad. They didn't have any precedents to compare it to because there had never been a comparable situation. There was the Great Comet Disaster with its destruction and loss of life, but there was no intent or agency behind it, so it was different. There was the Yellow Comet case where the agency and intent were clear, but it was localized and, from this perspective, small. The loss of one's entire species and its planet of origin to a silent and implacable enemy was unprecedented. The only possible comparison would be Orange Comet, if they ever felt safe enough to try to contact them.

"I think it's safe," said Frances. "We should be able to send a message to Orange Comet without being detected."

"You think?" said Winston. "We need more assurance than thinking it should be okay." Some of the heads around the table were nodding. The horror was so fresh, their isolation and vulnerability so real that they were inclined to reject anything that might attract the attentions of the Visitor. "You'll need to make a good case for it before we break radio silence."

So Fran explained about the relative positions of Green Comet, Orange Comet and the inner system. "We form a triangle," she said. "If we send a tight beam to Orange Comet, it will be angled away from the inner system, where they all are, and even farther away from the main vessel still approaching."

"How do we know they're all in the inner system? How do we know they only came from one direction? How do we know anything?"

"We can't know anything for sure, of course," said Frances. "For all we know there might be many Visitors approaching from all directions at once. They might have already discovered and destroyed Orange Comet and they're just waiting for us to give away our position so they can destroy us." She smiled at Winston who, to his credit, laughed. It was brief and weak, but it still showed that he saw her point. She went on. "But we only ever saw the flashes coming from one direction, so I think it's safe to say that there is only one Visitor."

"Okay," he said. "We can agree that one Visitor came from one direction, so the chances are that Orange Comet is still safe." The people around the table gave tacit assent to that. "But those smaller modules that it deployed . . . they were moving fast and there were a lot of them. Who's to say that one of them didn't go straight through the system? It could be within the target area of a signal we send, couldn't it?"

"Yes, it could," she said. "We tried to piece together what happened from the information we were able to gather, and we think we can account for the movements of most of the Visitor's modules. That's including the few that were destroyed." She shook her head. "But there are uncertainties. It was a chaotic time and we had to make some educated guesses. You are right to assume a finite probability that one or more modules left the inner system."

"Probabilities," said Winston. "It's always probabilities, isn't it?" He made a disgusted face. "Just once I'd like to work with some certainties."

"Be careful what you ask for," said Fran. "Certainties are so often terrible."

"Yes, you're right," said Winston with a shudder. "They usually are." He smiled wryly at her. "I guess I'll stick with probabilities. They're probably the less evil of the options."

Frances started a video. "I got Buzzard's guy to make this for me. It's based on Buzzard's math and a lot of estimates, so you'll have your fill of probabilities." It began by showing their position. Green Comet, shown in green, was beyond the termination shock, where the wind from their Sun was slowed down below supersonic speed, but not as far as the heliopause, where it's overcome completely by the interstellar wind. The ecliptic, where all the planets orbited, was shown, as was the orbit of their comet at an angle of fifty-four degrees to it. They were shown above the ecliptic, as it was customary to display north as up, but not too far since they were still so close to perihelion. They were twice as far out as the outer edge of the Kuiper Belt, but only a small fraction as far as the Oort Cloud, which was shown in an inset.

The view backed up and rotated left to show the Visitor, displayed in a menacing black, at the inner edge of the Kuiper Belt. It was a few degrees below the ecliptic and inbound on a radial about forty degrees away from them. Red Comet could be seen, just within the inner system, inbound fatally close to the Visitor's course.

The view backed up again and rotated right until it included Orange Comet, shown in orange. It was even higher above the ecliptic, even though the plane of its orbit was at a lower angle than Green's, because it was much further along. This illustration showed how much separation there was among all the objects. It showed Orange Comet almost opposite the Visitor, and it showed how unlikely it was that any of the Visitor's modules would have happened into that vicinity.

Fran put in a line showing the maximum spread there would be in a tight radio beam sent to Orange Comet, and it looked as if it would be completely safe. "But you can see why they wouldn't want to try to contact us," she said. "They could probably make a logical case for it being safe, but some of the variables would be too uncertain." She showed a beam coming their way from Orange and, even though it missed the Visitor by a wide margin, it was generally toward danger rather than away from it. "With Red Comet being destroyed and us being closer in than them, I don't blame them for being cautious."

"But then," said Winston, "if we do call them, how do we know they'd receive it, and how do we know they'd reply?"

"I've been working on that," said Fran. "We will rely on the likelihood that they will have some antennas pointed our way, so when we squirt a signal at them they'll be sure to receive it. Then, even though it will be white noise like some random pulsar beam, there will be enough of a pattern in it to trigger their apophenia."

"Apophenia?"

"That's our tendency to find patterns or correlations in random data," said Fran. "It's in our nature and I don't think it's in the nature of the Visitor."

"Apophenia, hey?" said Winston. "I like that one. I'm going to file it away for future reference." He gave her a look. "How do you come up with a word like that?"

"I didn't. At least not by myself. I learned it from a statistician. In statistics it's called a type one error."

"I like apophenia better," said Winston. "Please go on."

"Okay, so Orange Comet will receive our transmission, they'll deduce that it's artificial and they'll decode the first part that describes how to read the rest of it."

"The message will be in two parts?"

"Yes. One part will be a kind of manual for reading the other, main part."

"If it's so easy to decode, won't the Visitor be able to do it too?"

"Yes," said Fran. "If one of them is in the area, and it happens to intercept the transmission, and it decides that the white noise is a message, it might be able to decode it and then we'll be sunk."

"Hm," said Winston. "You say you were talking to a statistician. Did they happen to calculate the probability of all that?"

"Yes, as a matter of fact. With lots of assumptions and big error bars, though." She consulted her notes. "About as likely as me growing another set of arms, apparently."

"Not very likely, is it?" A chuckle went around the table. "So, tell us more about this message you want to send to Orange Comet."

Fran told them, and Elgin watched her talking. He was grateful that she had this project to be passionate about. She was glowing again, full of energy and enthusiasm, and it was a relief after the first dark days. Fran's talent for feeling what people feel and knowing what they need was a pathological trait during the time of destruction and despair. Elgin suffered terribly seeing her in such pain, and nothing he did or said seemed to make any difference. While she was present at flashball games, which they continued playing out of need more than desire, or at the café, her mind was elsewhere. He could tell by the focus of her golden eyes. If it was distant then she was thinking about what the victims were suffering. If it was interior then she was suffering their last moments in her imagination.

It seemed hopeless but he kept trying. He kept taking her out among people and he kept making her talk to him. Then one day when he was listening to her describe how the people of Red Comet must have felt as they tried to hide, he happened to say, "I wonder how the people of Orange Comet feel." She gasped and looked at him with wide eyes. He saw her focus come back from her dark horizons and he felt a little leap of hope. When she threw her arms around his neck and covered his face in kisses, he knew it was going to be all right again. Then she said the magic words.

She said, "Come on. We've got work to do."

And work they did. They had a good run of sixteen hour days, at it from the time they got up until they fell asleep talking in their bed. And they weren't the only ones. Fran enlisted everyone she could think of, and some who just happened to ask her what she was up to. The objective was to talk to Orange Comet. The challenge was to do it safely, without endangering either themselves or their sister comet. As far as they knew, these two comets contained the only surviving populations of their species, and it would be better to never hear from them again than to do anything that would threaten their survival.

So Fran taught herself about radio waves, how they propagated, how they could be focused and how a focused beam would disperse with distance. She got people working on the technology and the methods they would use, and what the message would say. And she began the development of the Rosetta Protocol, which would tie it all together.

“Yes,” said Winston, “you’ve mentioned the Rosetta Protocol before. Would you care to explain it?”

“I’d be glad to,” said Fran. “First, though, I’d like to emphasize that I didn’t create the protocol. I found people who are much better than I am at algorithms and so on, and they developed it.” She looked around the table to be sure everyone understood that. “Okay. The Rosetta Protocol is a two part system. One part is a method of encoding and encryption. This makes the signal look like random white noise and, after it’s made coherent, keeps it secure. If the Visitor detects the signal and decides it is a signal and not just a burst of noise, then figures out how to make it look like a signal, they will still have to break the quantum encryption. My developers tell me that the odds against that are too high to even try to put a number to.”

“Okay, that’s reassuring,” said Winston. “And the second part?”

“That’s got more to do with the content,” said Fran. “Green Comet and Orange Comet have been evolving independently since before we even got out here. Orange was out here for quite awhile already before that.” Her face got serious. “Until now we have had the common language of home between us, but that’s gone now.” She paused for one of those moments that descended on them far too often still, then she shook her head and went on. “Now our languages will diverge with time until one day we won’t even understand each other.”

“I’ve heard people say that already,” said Nigel. “After eighty years in hibernation they felt as if they were waking up in a different country.”

“That’s right,” said Fran. “Thank you, Nigel. The linguists I’ve been talking to would like that example.” She picked up the thread. “So, we’re going to need to keep up with the changes in each other’s language. The Rosetta Protocol will help with that. It will explain things in each language not known to be in the other. It will repeat everything in the common pre-diaspora language of home. And it will include current lexicons, defined in pre-diaspora. Any new words that have popped up on one comet or the other.”

“Like ‘effay?’” asked Elgin.

“Yes, exactly like ‘effay.’ It’s very unlikely that Orange Comet is using ‘effay’ for ‘first approximation’ as well. That would be too much of a coincidence. So we would have to use ‘first approximation’ in any message, but then we would also have a definition of ‘effay.’ As in, ‘Effay, infinity and the infinitesimal are equally distant.’”

“So,” said Winston, “the Rosetta Protocol would take care of encoding and encryption while also keeping our languages comparable.”

“Yes.”

“I think you’ve explained it very well.” Winston prepared to move on to the vote.

“There’s one more thing,” said Fran.

“Go ahead.”

“Even with all the safety and security built in, Orange Comet might not want to reply to us. They might consider even a tiny risk to be too much, considering the possible repercussions.”

“I think we all understand that,” said Winston, and there was a general sound of agreement. “What do you propose?”

“Well, this isn’t my proposal and, as much as I understand it, it might as well be magic,” she cautioned. They acknowledged that and she continued. “My communications experts say there is a new technology where they can use quantum states to code a message into a single atom.”

“A single atom? How much of a message can you get in an atom?” Winston didn’t even question the quantum part. He agreed with Frances that it was like magic.

“They say they can get about a thousand characters worth of data into one gold atom.” She looked at Elgin and Stanton and Buzzard, the closest thing she had to science experts in the room.

They nodded, and Buzzard said, "A thousand bytes. A kilobyte. Thousand."

"A thousand letters wouldn't make much of a message."

"No, but it would be enough to give their position and velocity, which would mean we could keep track of each other." That made their faces more attentive. "And there would still be room for some other information, like when to expect their next message. But the important thing would be making sure we don't lose touch."

Stanton spoke up. "This quantum stuff is over my head, but I can sort of see how it works. They told me that a thousand characters is the minimum and that they could increase it with some practice."

"How high?" asked Winston. "Did they give a maximum?"

"I'm not sure," said Stanton. "I think they tried to tell me, but I got lost when they started talking about superposition." Everybody was grinning and nodding their heads. "Anyway, the important thing is that it makes a viable way of sending messages, even if they're short."

"Yes, I can see that." Winston turned to Frances. "Can you give a brief explanation of how it would work and what makes it safer?"

She had another video, a simpler one. "They would build a particle accelerator and use it to shoot a few billion encoded gold atoms in our direction. They would be identical, all with the same message. We would only have to catch one to receive it."

"Billions?" Winston balked at the idea of wasting all that gold.

"Yes," said Fran. "Space is big and even gold atoms are small. Even billions wouldn't make a piece of gold big enough to see without a microscope." She consulted her notes again. "They would accelerate them to nearly the speed of light, so they would be like cosmic rays. As far as safety is concerned, a random spate of cosmic rays is even less remarkable than a burst of electromagnetic white noise."

"Did anyone calculate the chance of being caught?"

"Yes," said Fran. "Well, more of an estimate than a calculation. They gave the odds against discovery as 'infinity minus one.'" That got a good laugh.

"Final question," said Winston. "And I think I know the answer, but the question must be asked. If it's so safe, why don't we use it instead of radio to call them in the first place?"

"If they didn't know what to look for, they would be as unlikely to detect it as the Visitor would. It's only good if we're both aware of it ahead of time."

Winston nodded at the confirmation. "So, unless there's more," she shook her head, "I think I can recap, then we can put it to a vote. Do we want to send a radio message to Orange Comet, compressed, encoded and encrypted by the Rosetta Protocol, advising them to respond by the cosmic ray method if they don't feel safe using radio?" Fran nodded at the wording and they voted by a show of hands. It was unanimously in favor. Everyone was dying to talk to the only others like themselves in the universe.

Green Comet was a brighter place after that. When they announced that they were going to try to contact Orange Comet, people started talking again. There were lively debates when people met in the Square. Some of them were frightened and just wanted to keep their heads down, but they were reassured by the majority who wanted to reconnect and keep in touch. The air once again felt warm and it carried the sounds of children, who immediately responded to the lifting of the mood.

Fran was brighter too. As much as she was cheered up by the challenge of the task before, now she was luminous. It was as if the energy of Green Comet all ran through her, making her fluoresce brilliantly. Her aura once again shone with its characteristic clear light, and her radiance fed back and illuminated the rooms and corridors of the comet.

They opened up the message to public input. This wasn't just an official missive from one comet to another, it was also about people reaching out across the cold vacuum with the warmth of touch. This was about declaring that the Visitor had failed, that they were still here, still together. This was telling the universe that the people would go on.

Chapter Thirty-Two – Orange Replies

“**Why did** you say that you don't think the Visitor has apophenia?” They were on their balcony enjoying breakfast while the Square woke up. Elgin was looking at the crack in the pillar next to their apartment. The lighting within the ice showed it up nicely, and he was thinking about how things had changed since the crack was their biggest problem.

“I'm not sure yet,” said Fran. “It's still just a feeling, really.” She savored a sip of iceberry juice. “When I was researching the Visitor for last week's meeting, I learned quite a lot about it.” She paused, looking at something, or more probably nothing, on the other side of the Square. It didn't worry Elgin, though. Her eyes didn't look the way they had before, in her dark time. Soon enough she came back, glancing at him, a little amused at herself. “I read a lot of descriptions, and heard some, and saw quite a bit of video, too.” She frowned. “I can't explain it yet, but I seem to have formed the impression that the Visitor is different from us.” Now she laughed at herself. “What an insight, eh?” Elgin chuckled along with her. “Obviously I'm not ready to put it into words,” she said.

“Oh, no,” said Elgin, “you're doing fine.” She slapped his shoulder and he ducked, grinning. “But you have this feeling and I know enough to know that it will come to something eventually. We just have to wait until it's ready.” He took a bite of toast and crunched it up. “So,” he said, “your message should be about halfway to Orange Comet now.” They sent it last night just before bed, and Orange would receive it, if they were listening, by the end of the working day.

“Yes. I can't wait.” But she was going to have to wait, of course. Even if they replied right away, which they wouldn't, it would be tomorrow before it arrived. But it would take some time before they were ready to reply. If they decided to use radio then they would have to study the Rosetta Protocol and spend some time composing the message. More likely they would use the cosmic ray method and that meant having to build a particle accelerator first. Stanton estimated that would take about a month if they were starting from scratch, so that's how long Frances was prepared to wait before she started to worry.

“Me neither,” said Elgin. “Meanwhile, I think it's time to get back to work on the joining.” It had been months since anything substantial was done about that. Other than critical safety inspections and basic structural analyses, virtually nothing had been accomplished since the Visitor revealed its intentions.

“Oh yes,” said Fran. “It will be good to do something normal for a change.” They shared a laugh at the idea of joining two comets being normal. “What are you planning to do?”

“I've already been studying the sensor data, getting an idea of what it looks like.” He smiled proudly. “You know, the real thing is a lot like the simulations. Buzzard's work in particular is very close.”

“I think we have his smoke ring to thank for that. He analyzed the data to within a micrometer of its life.”

“Yeah!” said Elgin. “Wasn't that amazing?”

“Well, he's an amazing young man. Stanton is so proud of him.”

“Yeah.” They enjoyed the moment. “Anyway, we need to start thinking about some construction projects. We'll need a corridor linking the two comets first, I think. And we need to begin a proper survey of resources.”

“You mean with all the analysis we did for the joining, we still don't know that?”

“No. That was all structural. Now we need to identify specific resources and map locations and quantities.”

She seemed distracted, but she asked, "That's going to be about a thirty kilometer corridor, isn't it?"

"Yes," he said. "It gives us an excellent chance to engineer that curve you were talking about."

"Oh?"

"Yes, you remember." He studied her, puzzled.

"Oh, right," she said, "the underground orbit."

"That's right." She was lost in her thoughts. "Rannie?"

She surfaced. "I'm sorry," she said. "Did I miss something?"

"No," he said, "but something is obviously on your mind."

"It's nothing," she said.

"It is so. When I talked about inventorying the small comet, you went somewhere in your head. Is there something I need to know?"

"No," she said. "I mean, I don't think so. Oh, I don't know." He could see her concentrating on it, digging for whatever answer was there, whatever explanation she could give him, so he waited patiently. Finally she told him, "It's not clear yet. I can't tell you exactly what it is or justify why I feel it, but it feels as if there's no point thinking about the little comet."

That chilled him. After the effort they went to and the sense of accomplishment they achieved, what could be so dire that it would become irrelevant? But, "You say it," he said, "and I know it's right."

The time for the message to reach Orange Comet came and went and there was nothing to do then but wait and hope there'd be a reply. They had some antennas pointed that way just in case they decided to use radio, and they got something at about the right time. Given the time for the signal to get there at the speed of light, and the time for one to come back, plus a little more to decipher the message and compose a reply, the short burst of static could have been real. But it could just as easily be only another bit of static like they picked up all the time.

It was Buzzard who figured it out. In the same way he figured out what the light signals from the small comet meant that day they showed Elgin the bubble, so he figured out the response from Orange Comet. It happened at work when Elgin told him how long the message was.

"One point seven-nine seconds," Elgin told Fran. "Pretty random, right? But when I told Buzzard he laughed and said it was a response from Orange Comet." He was grinning and shaking his head.

"They sent a message already?" asked Fran.

"No, it's not a message in that sense. There's no pattern in it at all. It's a completely random bit of static."

"But Buzzard thinks the length of it is significant. Why?"

"It's not even the length itself, really. It's just the number. He told me what it was and I looked it up." Elgin digressed. "Not that I needed to, of course. That's not the sort of thing Buzzard makes a mistake about."

"No," said Fran. "It's hard to tap your foot in microgravity, but it is possible to look as if you want to."

"Oh," said Elgin. "I bet you're wishing I'd get to the point."

"Yes," said Fran.

"Okay, well, one point seven-nine seconds is significant because, according to Buzzard, one point seven-nine Angstroms happens to be the atomic radius of gold."

"Of gold?" she asked, astounded by the improbability of such a connection while also impressed by its beautiful symmetry. "Gold?" She clapped her hands and laughed for joy. "It is a

message!” she said. “Orange Comet is okay and they will be sending us more by the cosmic ray method.”

“That's what Buzzard thought, too.”

“This is wonderful news. Now all we have to do is wait.”

Knowing that they would be getting a reply took the stress and worry out of it, but it also led to impatience. It was going to be a long month so they decided the best way to wait was to work. Elgin and Buzzard started on designing the new corridor, the “orbital” as they took to calling it, including how it would join the small comet and what it would join to on the other side. Stanton began laying the groundwork for a complete survey of resources in the small comet. And Fran, as always, was busy with the planning committee.

The month went quickly at that. The work and the puzzles that needed solving engaged their minds so well that when the message did arrive, although it wasn't a surprise, it caught them doing something else. That didn't stop them from dropping everything and running to the meeting room, though, so there was a good crowd there.

Winston was seated at the table, flanked by Frances and Nigel, a single sheet of permapaper in front of him. Elgin took up his accustomed position, standing with Stanton and Buzzard against the wall opposite the front of the table. He looked at Fran to see if she knew anything, but she shook her head with a tiny shrug. The conversation in the room went in waves, building to a roar and then suddenly dropping to near silence before building up again. It was roaring when Winston picked up the paper and before he had it completely off the table, silence descended with a bang. This was reminiscent of last time Winston had an important message to read. Last time they didn't know what to anticipate and they got bad news. This time they were expecting good news, but underneath was a thick layer of apprehension.

Winston tapped the table with the paper. “This morning,” he said, “we received a reply from Orange Comet.” He waited while relief washed around the room. “They sent it using the cosmic ray method and we deciphered it using the Rosetta Protocol, as explained by Frances.” He paused as she was given a round of applause. “We captured exactly one thousand, six hundred sixty-seven gold atoms and the first two we examined were identical.” An appreciative cheer went up. “The first thing we discovered was that they have already increased the character limit to two thousand.” The cheer became thunderous. In the grand picture it was a fairly minor thing. They knew there was room for improvement in the message size, and that it would come inevitably and soon, but this confirmation seemed to be a sign that there was good news left in the world. Winston let the released tension run out. There was no hurry.

Finally someone called out, “So, what does it say?” and everyone focused on Winston. He held up the paper and began to read. “Greetings Green,” it started, and it continued in the same terse, economical style. It consisted mostly of facts, beginning with their position, orbital specifics and velocity. There followed information about their population, frozen and animate, including how many children had been born on the comet. There was even a note of the suicides they'd had. Eleven. It was short and the language was dry, but somehow it conveyed the spirit of Orange Comet. They felt closer to their sister comet now than they ever had. It made the final twenty-seven characters more strange. They didn't fit the style of the rest of the message, or the content. Winston read it in a puzzled tone. It said, “Visitor von Neumann machine.”

After a confused silence, everyone talked at once. Everyone, Elgin noticed, except Frances. From the moment Winston finished reading the message until the meeting broke up, she didn't say another word. She met his eyes and he could see an understanding in hers. When she glanced at Buzzard next to him, he saw a tacit realization pass between them. He was excited and curious to find

out what they knew, but a little scared too. They had that satisfied, almost triumphant air of discovery, but he detected an underlay of unease.

As they crossed the Square after the meeting, they heard Winston reading the message over the public address system. He did include the last phrase. They'd wondered if he would. When they left the meeting room he was still debating with himself whether he would or not. They were proud of him for leaving it in. He chose to trust the people to deal with the anomaly rather than holding it back to save them from the dissonance.

Stanton and Buzzard were coming back to the apartment with them. They needed to talk. It was obvious that Fran and Buzzard were holding it in, waiting until they got somewhere less public, so the four of them made a beeline for the balcony, then went straight into one of the front rooms. Immediately, Fran and Buzzard started talking, but it wasn't in complete sentences. Elgin and Stanton heard fragments and obscure references to things that the other two seemed to have discussed before, but it wasn't making a full picture for them yet. They could have interrupted, asked questions, demanded to be included, but they were smarter than that. They knew that a few minutes of patience would be rewarded, and it was.

They stopped talking, looked each other in the eyes and nodded. Then Fran turned and said, "I'm afraid we have to separate the comets."

Chapter Thirty-Three – They Need A Debate

Elgin and Stanton looked at each other, speechless, then back at Fran and Buzzard. They didn't speak either, so Elgin finally said, "Just to make sure we heard you right, did you just say that we have to separate the comets?"

"Yes," said Fran while Buzzard nodded.

Elgin didn't want to admit it, but he heard the music in her words. He couldn't believe that he could tell if something was right from so little information, so he found himself questioning it again. "Are you sure?" he asked. "I mean, of course you're sure, but how can you be sure?"

So Fran explained while Buzzard provided supporting comments. They were speculating about the Visitor since before Elgin's waking. Even then, before anyone knew what it was, they were sure it was artificial. Then, after that was established, they became convinced that it was sinister, mostly because it wouldn't talk to them. She reminded Elgin that they had talked about that.

"Yes," he said, "and I knew you were right then, too."

She smiled at him. "And then I did all that research before we sent the message to Orange Comet, and I began to have troubling feelings about it." She explained how she and Buzzard analyzed the data and tried to form an idea of what the Visitor was and what it wanted. "We couldn't come up with anything. We couldn't understand why its actions didn't tell us anything about its character." Then, when Orange Comet gave them the idea that it was a von Neumann machine, they realized that it had no character to discover. At least, not the kind of character they were looking for.

Elgin glanced at Stanton, who appeared to be happy to let him continue, so he said, "You mean it's a machine and it doesn't act like us?"

"Exactly."

"Okay, we can see that. But how does that lead to dismantling the comets?"

She looked at Buzzard, gathering her thoughts, then she nodded. "Once upon a time," she began, receiving an appreciative chuckle, "some people sent out a von Neumann machine to explore a neighboring star system." The spacecraft would have been small and it probably would have been alone, although they might have sent two for redundancy. This robot would have taken decades to get there and would have been programmed to follow specific procedures upon its arrival.

Stanton said, "It was supposed to explore, look for signs of life, secure resources and replicate itself." He shrugged when Elgin raised his eyebrows at him. "One of my engineering profs was a space buff."

"Your professor was right," said Fran. "So that's how we think the Visitor started out." But something must have gone wrong. Maybe there was an error in the programming that didn't show up until much later. Or maybe a cosmic ray zipped through it, knocking out some crucial bits. It's even possible that its creators intended it to be this way. "Although I doubt that," said Fran. "It doesn't make any sense outside of one narrow, insane point of view." They could keep it as one of the possibilities, though one with a low probability. The important thing was that it went badly and the machine's goals got magnified beyond reason.

"Your hypothesis, then," said Elgin, "is that the machine went rogue and its mission of exploration has turned into an obsession, with its original goals perverted into conquest and destruction."

"Yes, although I wouldn't call it conquest. We don't believe it thinks that way." Her face suddenly showed horror followed by deep pathos.

"What is it?" asked Elgin.

She swallowed and said in a whisper, "We think it's still just securing resources, as in its original programming. It needs to eliminate any threat to those resources."

That horrified Elgin, too. "Do you mean we're nothing more than pests to it? No different from the pests that eat our crops?"

"That's right. It might see us as an infestation. Or we might be an infection, like a mold on our crops. Or it could see us as nothing more than simple corrosion, eating into its resources."

They stood in silence, contemplating the ultimate in unintended consequences. It's one thing to be killed by someone who means you harm, but it's quite another when they don't care about you at all. They couldn't think of the Visitor as an enemy now, because they were irrelevant to it except as a threat to its mission. Stanton, his voice low, nearly a growl, said, "I'd like to get hold of those programmers. Just for a few minutes."

Elgin brought them back to the moment. "That explains things pretty well. It makes a kind of sense now. But you still haven't shown why we need to separate the comets."

"Well," said Fran, "when it finds us it's going to be able to see that we've stuck them together. Then it will destroy us."

Music again. Elgin knew she was right, but there might be hope yet. "But," he objected hopefully, "that assumes it will find us. That it will even look for us. We're pretty far out here and it's got all the resources of the inner system. Why would it even bother with us?"

Fran and Buzzard nodded. These were the very questions they asked in their speculations. "This is where my feeling comes in. As yet we don't have a convincing argument to support it, but my feeling, from all we know about the Visitor, is that we are still close enough and our existence important enough that it has to search for us."

She was right. He knew she was, even though they didn't have definite proof to support her instinct. Stanton was looking at him, watching his face, and he nodded, his shoulders slumping. He could see that Elgin knew and, proof or no proof, he knew it was time to start preparing to separate the comets. "You say it," said Elgin, "and I know it's right." He said to Stanton, "If it's already on its way then we'd better get started."

"Wait," said Fran. "We can't just do it." They stopped. "We're going to have to debate it and put it up for a vote. And that means we're going to have to come up with some very convincing evidence to support our arguments." When she saw the protest forming on Elgin's face she said, "Not everyone finds my words musical, you know."

Elgin couldn't believe that. Rationally he knew that it must be true, but he had to work hard to see it. Knowing when she was right was so natural that he automatically assumed everyone knew it. But he was a scientist. He had learned to resist assumptions. "Understood," he said.

It wasn't going to be as easy as just announcing that there would be a debate. They would have to make a case for it. That meant going back and doing more research. They had to look at everything with fresh eyes, trying to find those things that contributed to Fran's feeling, and then finding even more evidence to justify her intuition and to convince everyone else. It was going to be difficult to make this case. Not only was there a powerful community pride in their achievement, there was also their innate conservatism. Roughly one-fifth of their resources could be in the small comet and that was all they had, possibly for thousands of years. Someone's feeling, even Fran's, was not enough reason to throw it away.

Probably pride would be an equally strong deterrent, maybe even more so. Here was the greatest engineering feat of all time. If they took it apart they would never get to show anyone. On a deeper and even more powerful level, it was also a symbol of their collective effort. This was something they had accomplished together. It was an expression of their unity, of their community.

This could be stronger than fear of destruction by a distant threat. It would certainly be more powerful than the logic or rationality they might bring to any argument.

They were going to have to put together a strong case if they wanted to have a debate, but that was going to be easy compared to the work they needed to do if they wanted to win the debate. They needed to show the callous cruelty of the Visitor, certainly. They needed to show how assiduous it was in discovering and exterminating people, how it followed the slightest clue to its victims. But more important than that, they would have to show that it would come after them, even way out here.

The four of them worked hard that evening. They spent a lot of time at the terminal, reviewing as much material as they could that exhibited the behavior of the Visitor. As their knowledge of it built up, Elgin and Stanton began to see what Frances meant, independent of their faith in her judgement. Once you come at it with that idea, they thought, the conclusion becomes inevitable. In its programmed need to secure resources, the Visitor would be strongly compelled to follow their trail.

"This shouldn't be that hard," said Elgin. "It's all right here. All we need to do is show it to the people and they'll see it too."

Fran smiled at him again. "I hope you're right," she said, but it was obvious she wasn't so sure. "At any rate, I think we've got enough to take to the planning committee. I think they'll agree we need a debate."

With the work done they retired to the balcony, where they had tea and biscuits while they contemplated the future. Fran said, "This will all have to go," indicating the Square.

"What do you mean?" said Stanton, surprised.

"This will all have to be broken up."

"I thought we were just going to separate the comets." Stanton was experiencing the shock that would affect everybody. They were going to have to make sure that everyone understood all the implications.

"It's more than that," said Fran. "We're going to have to make the comet look dead. In fact, it's going to have to look as if it has never been alive." She looked stern. "We have to break up all our structures. No right angles can remain. We have to open it up and let the heat out. Most of us have to be in hibernation, as well hidden as possible. The only way this will work is if the Visitor has no reason to be suspicious."

They knew she was right. If they were going to do this, they were going to have to go all the way. Simply breaking off the small comet and trying to lie low wasn't going to be enough. The people of Red Comet had tried to hide from the Visitor and now they were dead along with everyone else. "You're right," said Stanton. "We'll need to put at least as much effort into this project as we did with the joining."

They quietly sat with their thoughts, while the Square went from the light traffic of late evening to the peace of night. They were aware that they were the only ones who knew what was about to happen to it.

Winston barked a surprised laugh when he heard it. "You must be joking," he said. "After all we did to join them?" He scowled. "This isn't something to joke about. We need those resources."

"It's no joke," said Fran. "I wish it were." She indicated the other three, who wore equally dour expressions. "We tried to see a way around it, but the evidence has convinced us that we need to have this debate so the people can see it and make a decision."

Winston knew and trusted Fran's intuition. He was also aware of Elgin's reputation and he had unqualified respect for Stanton. What Buzzard did and how he did it was beyond him, but he knew he had predicted the smoke rings when no one else even thought to look for them. The fact that these four were bringing this forward made him think there might be something to it. But the resources. All that

work. He wanted to veto their proposal out of hand, but that was not the way things were done. He took the responsibilities of his position seriously, so he told her to make her case. Then the committee would vote on the debate proposal.

Fran did most of the talking, while the other three chimed in with bits of extra information. They played some audio and video recordings to illustrate the danger of being discovered, and they played snippets of the data and descriptions compiled and transmitted while the Visitor systematically cleansed the system of people.

Fran said, "We believe that the Visitor will certainly come after us, and when it does it will find us. We won't be hard to find. When it does find us it will see two comets stuck together in a most improbable way, and it will know we're here and it will annihilate us."

"How certain is all this?" asked Winston. "Surely it's nothing more than a hunch based on a feeling."

"You're right," said Fran. "It's not absolutely certain. So far, it's only our feeling based on observation." Winston nodded and she continued. "That is, it is only our belief that it will certainly pursue us. That is not certain at all. However, if it does come after us then it will find us and it will destroy us." Winston nodded more reluctantly. "It's the seriousness of the consequences that we feel makes a debate mandatory."

Winston checked with Fran to see if there was any more that they wanted to say. When there wasn't, he said, "We can vote on this right now, because of the implications. If separation is necessary, then it's urgent." He cleared his throat and said, "By a show of hands, those in favor of a debate on this matter, raise your hand." Then he repeated it for those against. This vote wasn't unanimous. It barely passed. Both Winston and Nigel voted against.

Chapter Thirty-Four – The First Debate

A soft chime sounded through Green Comet, and the people cocked an ear for the message. There was none, only a few seconds of silence followed by another chime. When the third chime came people put down what they were doing and gave the public address system their full attention. Three chimes indicated the most serious of messages.

The sound of Winston's voice confirmed it. The chair of the planning committee wouldn't be reading an ordinary announcement. The mike went live and Winston cleared his throat before saying, "People of Green Comet, this is Winston, representing the planning committee, with an important announcement." He paused, then continued, "A proposal for a debate has been brought to the committee for consideration and a simple majority has voted to approve it. Therefore, one week from today the first of two debates will be held in the Square." When he paused this time the peoples' minds filled the gap with questions. What debate could be this serious? Who brought it forward and who would be arguing?

Winston didn't leave them guessing for too long. "The question to be debated is whether we should separate the comets." It makes a very funny sound when that many people gasp in an enclosed space. "You can find more details on your terminals. Thank you for your attention." The mike went dead.

Green Comet filled with the roar of excited conversation as people pounced on the nearest terminal to find out what it was about. There was a brief description of the premise on which the proposal was put forward and the names of the debaters were there. Arguing for would be Frances and opposing her would be Winston himself again.

During the week leading up to the debate the four of them spent many hours together, gathering information and helping Fran prepare. She was planning to present her case in the form of a narrative, from the time the flashes were first seen, to first contact, to methodical annihilation. She wanted to emphasize the inevitability of the final outcome, and the plodding, mechanical thoroughness of the Visitor. She thought it was important to make people realize that they didn't matter to it. It didn't care about them beyond their threat to its resources, and it cared about its resources a great deal.

She was going to use real material, audio and video transmissions from the people under attack, to punctuate her speech. She would have diagrams showing the positions of all the major objects and populations in the system, and demonstrating how close they still really were to the inner system. Toward the end of her presentation she hoped to be able to show a simulation by Buzzard's guy, demonstrating how easy it would be to find their trail and track them down.

Fran was very busy assimilating the information and practicing speaking. Being Fran, though, she also spent a lot of time talking to people. She wasn't trying to convince anyone or to get them on her side. That's what the debate was for. She was talking to people to find out what they thought and how they felt, and to get a feel for what they needed. Knowing would allow her to debate more effectively, but to her it was more important that she would be able to know how to speak to the people's needs. She wanted them to understand the threat, to fear the Visitor, but at the same time she wanted to show them how they could fight the threat and overcome the fear.

Fran was nervous but it was all right. She had done this before and she found that a little nervousness could be helpful. It gave her more energy and helped her be more alert. She was standing with Winston on a small dais before a pair of green pillars. In front of them stood almost the entire

waking population of Green Comet, save for the few who absolutely could not leave their work, and even fewer who couldn't be bothered. At the back of the crowd she could see Buzzard and Stanton, and they nodded and showed their support. On the edge of the audience, on the yellow side to her right, stood Elgin, his solid presence a buttress and his steady gaze a rock.

As the proponent in the debate, she would go first. She shook hands with Winston, leaning in to say something to him. He nodded and smiled, then patted her on the shoulder before withdrawing far to one side. As she turned to address the listeners a large screen behind her filled with their best image of one of the Visitor's modules. It looked efficient and deadly. There was no concession to style or artistry and certainly no attempt at beauty. All its lines were utilitarian with no obvious structures looking as if they could house living beings. It embodied the cold, uncaring logic of a machine.

"Hello Green Comet," she said, smiling. A murmur of response went through them and she said, "Thank you." She didn't waste time sidling up to it, choosing to plunge straight in instead. "We have to separate the comets," she said, "and I'm going to tell you why." Then she told her story, accompanied by the sights and sounds of their species' demise at the hands of the Visitor. She showed and described the inevitable result of being discovered by it, and tried to show the high probability that it would come looking for them. "We can't say with certainty that it will pursue us, but we believe the probability is high, and the result would certainly be terrible."

"But that doesn't have to happen," she insisted, deeply affected by the fear and uncertainty in their faces. "We have the power to control our fate." And she outlined a plan to remove the small comet and make Green Comet look dead. With careful preparation and a few tricks thrown in, she assured them that the probability of survival was high. "By our will and our willingness, we will defy the Visitor and ensure the survival of our people," she said. "Only by not confronting the Visitor can we defeat it."

Winston stepped forward as Frances moved away from center stage. He stopped to congratulate her on a fine speech and this time it was she who patted his shoulder in encouragement. He could see that the audience was quite worried. They obviously thought she had made sense and they didn't know how much of it they should believe. Well, he would reassure them. "We don't need to separate the comets," he said, "and I'm going to tell you why."

Yes, the consequences were dire when the Visitor found people. But they had no evidence that it was even looking for them, much less that it could ever find them. Winston saw them relax as he spoke. Their tense bodies loosened up and their faces smoothed out. His grave, substantial presence gave them confidence and his deep, measured speech made them feel calm. "And we need both comets," he told them. "We need the resources, all the resources, if we are to survive." It was time to use a little anxiety in his argument, now that he had dissipated Frances'. "It's obvious we can never go home," he said. "We have to stay out here among the comets or we have to make our way to another star. Either way we're going to be out here for a long time." He let that reverberate, then said, "We can't afford to throw anything away based on mere speculation."

The image Winston chose as his backdrop was of the joined comets, showing Buzzard's smoke rings sailing majestically away. It was the only image he showed because he wanted to emphasize the security of permanence, while he talked of not only the value of their precious resources, but also the grandeur of their achievements. His goal was to plant in the people's minds how much they would be losing if they chose to listen to Frances. "The Visitor has already taken away so much," he concluded. "We mustn't allow our fear to finish the job for it."

The people had about the same distribution as the planning committee, it seemed. Roughly half of the committee approved the debate and the other half opposed, and approximately the same

percentages seemed to fall out after the first round of debate. The comet was alive with discussions during the week between debates, and many of them were vigorous and loud. There was so much to lose either way that the intensity of emotions began to lead to violence. They were powerless to do anything to the Visitor, and they began to take out their frustrations on each other.

Frances and Winston got together and tried to calm people down. They spoke on the public address system. They went to the schools to show the children that, though they opposed each other on the dais, they were working together for the good of the comet. And they roamed the Square, where most of the discussions were taking place, and showed by example that they could disagree and still be reasonable. "Reason and compassion," they told the people of Green Comet, "are what make us better than the Visitor, and better than it thinks we are."

Chapter Thirty-Five – Elgin's Fractal

Elgin couldn't believe it. Only half of the people seemed to agree with Frances. After everything she showed them, half of them still couldn't see that she was right. He thought she had them for a while as she was speaking. He could see it in their faces. But then Winston took his turn and they seemed to forget. All their work, all of Fran's work, undone by a few words from Winston. "How could he do that?" he said.

"Who?" asked Fran. They were having breakfast on the balcony.

"Winston," he said. "Surely he must know you're right. How could he say what he did?"

"That's the essence of debating," she said. "Even if he did agree with us, it's his duty to debate his side to the best of his ability."

"Are you saying he doesn't agree with us?" Elgin couldn't imagine how an intelligent man like Winston could be so wrong and so sure of himself.

"Yes, I am. I think Winston truly believes what he said."

Elgin had to accept that because it had the music in it. The music, he was grudgingly having to accept, that no one else could hear. Well, he could hear it and he knew she was right. But this wasn't just a case of who was right and who was wrong. This was about the survival of Green Comet. If they couldn't convince enough people, then they were all going to die. There could be no satisfaction in everyone knowing they were right then. He got up and stepped to the edge of the balcony.

"Where are you going?" asked Fran.

"I'm going to talk to him."

"Who, Winston?"

"Yes. I've got to show him that you're right." He jumped.

"Okay," she called after him, "but remember, he's doing what he thinks is best for the comet."

Elgin thought about that on his way to the meeting room, where he hoped to catch Winston getting to work. "Doing what he thinks is best for the comet?" Of course, he knew it was true. He didn't even need Fran to tell him so. Everyone knew that Winston devoted himself to the comet with a sense of honor. Obviously he was doing what he thought was best. Therefore, Elgin concluded, he simply didn't understand that he was wrong. Because he was certainly wrong. All the facts pointed to it. Fran's intuition confirmed it and his own senses told him she was right. So his job this morning would be to convince Winston and show him a better way to serve the comet.

He did catch him at the meeting room. They arrived almost simultaneously, before anyone else was there. After the pleasantries, Elgin said, "Fran and I were talking over breakfast about debates, and how people can sometimes end up arguing for something they don't really believe."

"That's right," said Winston, working with the coffee maker. "In the tradition of debating, one argues whatever position they're given, whether they agree with it or not."

"So," asked Elgin, "is that what you're doing?" Winston looked up quizzically so Elgin added, "I mean, you know that Fran's right but you're arguing against her from duty and honor?"

"By no means," said Winston. "I took the con side because I believe it to be the right side."

So Elgin had to go to work to convince him otherwise. He began by simply telling him the facts, thinking that any reasonable man would see the light if he was only shown it. When that didn't work he became more insistent. He didn't intend to intimidate Winston, he was merely extremely earnest, but this was probably the first appearance of his famous face. The heavy brow and bulky jaw, though he was unaware of them, must have had an effect. He thought he saw the man's eyes flinch. But in the end, when Nigel showed up and the conversation was over, he had to leave not knowing if

he'd had an effect. And wondering about the hostile look on Nigel's face.

The discussions and arguments continued through the week, although people were more reasonable than before. Voices were still raised but there was no more physical violence. Stanton always made sure that people knew he supported Frances. He didn't have much of a way with words, preferring to stick to the bare facts, and when pressed he could only say that Frances had a way of knowing things. And when Elgin said she was right, given his reputation for being able to tell, that was enough for Stanton.

Buzzard tried to convince people too, but with his way of talking the only thing he could communicate was enthusiasm. Telling people, "Elgin knows. Frances is right. Elgin knows Frances is right. It's not magic," didn't convince many.

There was no need for Elgin to say anything. Everyone knew what he thought. Still, he said it anyway, to anyone who asked and many more who hadn't. It was unclear if his fervor was more about the fate of the comet or about his loyalty to Frances, but the result was very intense for anyone who became the focus of his attention. People started avoiding him. He didn't notice that, though. He was only interested in the people he did meet, and whether they knew what they needed to know.

Frances appreciated the support and she made sure to let them know it. With two days left until the second debate, the four of them enjoyed a few minutes of relaxation after yet another busy day of preparation. She personally served the tea and biscuits even though they were within the reach of everyone, and she thanked them for their support. They objected and waved her away of course, but you could see that it meant a lot to them.

After Buzzard and Stanton left, she said to Elgin, "You really don't know how much I rely on you, do you?"

"I'm just trying to help," he said.

"You do help," she said, "but it's more than that."

"Well," he said hesitantly, "I can tell I do something for you. You seem to be happy when I'm around. But I don't know what it is."

She thought about it. "I really do rely on you," she said. "Do you know why I tell you my ideas?"

"As a sounding board, I guess. For practice."

"Yes. And because you know which ones are right."

That made him think. He was used to her being right. He was accustomed to the harmonious music when she spoke. Now she was saying that he not only knew when she was right, but he helped her get there? "No I don't," he said.

"Yes you do!" she insisted. "I can tell by your reaction which ideas will go somewhere."

He knew when she was right and he could tell that she was right now. "I really help you pick the right ones?" he asked. "I didn't know that."

He was so cute she had to laugh. That made him smile and that made her hug him.

On the night before the second debate there was a flashball match. The Harriers had been practicing a new pattern suggested by Elgin. The lengths of the passes and the angles between them changed by fractal amounts, so this was the play that would come to be known as Elgin's Fractal. It took a lot of practice because their brains were used to working in whole numbers. They were hoping their opponents, the Falcons, would be thrown off too, at least long enough to score a few points.

They weren't disappointed. The teams were evenly matched and they played a good, close game, highlighted by excellent defensive play. Near the end of the game, on what they thought might be their last clear possession of the ball, Elgin started the new pattern with a long pass. As the passes

decreased in length, hit bottom and increased again, it was just unusual enough that the Falcon defenders were always a little behind the ball. It ended with Buzzard of course, with the last, long throw aimed at the shell of the sphere. Using his long body like a whip, he flung the flashball as hard as he could. It seared up through yellow to white, and half the people swore they heard a crack when it flashed.

The audience knew they'd seen something special and they burst into wild applause and cheering. All the members of the Falcons and all the officials acknowledged it with thumbs up and clapping hands as well. Buzzard caught Elgin's eye and they nodded at each other before Elgin flew out of the ball and headed for the exit. He flew over Stanton and Galatea, who had watched the game together, and they traded nods too. Other members of the audience saw him leaving, but they were hushed when they saw his face.

The players and officials left the ball and congregated between it and the audience, where they were joined by members of other flashball teams and off-duty officials. There was discussion of the novel pattern the Harriers had just executed and they worked toward a consensus on how many points it was worth. They were aware that their ad-hoc decision would set a precedent, so they were careful to get it right. It became obvious that there was unanimity for giving them the maximum, but someone suggested that it was worthy of more. When they announced that they would award four points, one more than any pattern had earned before, the audience received the decision warmly. Everyone felt it was perfect.

A commotion started at the back of the crowd. Out of the hubbub could be heard snatches of single voices saying, "What's that?" and, "It's Elgin." The voices rose with alarm and someone said, "What's he doing?" People fell back from the entrance, crowding into each other, and it was soon obvious why. A large, metal, man-shaped mechanism entered the gallery.

Its dimensions were about triple those of a man. That is, its overall length was three times Elgin's, who could be seen embedded in the center of it. Its arms and legs were three times the length of his, too. He wasn't so much inside it as wearing it. Its movements replicated his. It was a power-assisted mechanical extension of his body. Machines like this were used to perform some of the large tasks involved in the care and maintenance of the comet. It was unclear why Elgin had brought it here. Some strange celebration of the flashball game perhaps?

When he turned it to walk along the wall, its setae feet clinging with solid confidence, they could see that one of its hands gripped the handle of a large, massive hammer. When he reached one of his struts, he stepped onto it and walked its length to the ball, and rising concern swelled the volume of the crowd's voice. They unconsciously pressed forward, but were held back by the flashball players and officials between them and Elgin.

The metal man, in a stick-man caricature, stepped off the strut and onto the ball, where it turned around and planted its feet. The crowd calmed, but erupted again when it raised its hammer high above its head. Elgin, his face barely recognizable, looked at Stanton and Galatea. They both nodded, her face almost the mirror of Elgin's, and he brought the hammer down with destructive force on her highly polished joint.

The crowd noise was mostly a moan, but it contained shrieks and cries of protest and anger. Some of them lunged forward to try to stop him, but the players deftly cut them off. Elgin hitched his machine to the left and brought the hammer down again. And again. In about ten minutes he made sixteen strikes and worked his way around and back to where he started. Then he walked around it, inspecting his work and tapping here and there to complete the separation. Satisfied, he turned and walked over the dome of the ball to the strut on the other side, where he spent another ten minutes destroying his work there.

As he walked the machine back up to the top of the dome, he noted with satisfaction that

Buzzard was gone, as they had planned. He saw Stanton flying toward him as he stopped, and when he extricated himself they exchanged a few words. Then he flew over to join Frances and Galatea while Stanton climbed into the metal man. A deep-throated roar built up as people realized what was about to happen, and there was a more emphatic surge forward to try to stop it. Once again the skill, training and determination of the players and officials prevailed.

Stanton shuffled the machine's feet, adjusting his position until it felt right. He looked over at his friends, ensuring the rightness of what he was about to do. He hung onto Frances' golden eyes for a long moment, and found there the conviction he was seeking. The crowd was practically sobbing as he slowly raised the hammer, but when he brought it down and cracks shot out from the point of impact, the reaction was more a sigh of resignation and acceptance.

He pounded on his creation for about ten minutes, breaking out a big chunk and leaving a five meter hole in the shell. When he got out of the machine, Galatea was there for her turn. She didn't work on a single spot, rather she roamed over the surface doing as much damage as she could to her polishing job before her time was up. She was followed by Van Allen and Laika and everyone else who'd worked on it, then the players and officials, and finally anyone who wanted to. It went on throughout the night and continued for days, pausing only to replenish the machine's energy packs.

After two hours of it, Buzzard came back and let them know that his mission was successful. Stanton patted him on the back and, while everyone congratulated him, Frances gave him a hug. Her eyes showed how she felt his pain, but he brushed it all off, insisting that it wasn't important.

They all looked at each other, the hammering continuing in the background. They knew that the night was getting on and tomorrow, with its critical debate, would come all too soon, but this felt like an important moment. No one was in a hurry to call this a day, but Elgin wanted Fran to get some rest. He said, "So, now it's down to you and Winston, eh?"

Her eyes widened with realization. "Oh," she said, "I forgot to tell you. Winston won't be there."

"He won't?" Elgin's flash of hope was quenched by wondering why. "What's wrong?" he asked. "Is he sick?"

"No," she said. "I just found out today and there wasn't really a good time to tell you. He took early hibernation."

"Early hibernation?" said Elgin, surprised. "But why? He didn't say anything when I talked to him the other day. He seemed fine."

"He told Nigel of his decision a couple of days later," said Fran. "He told him that he was feeling tired and needed some rest."

"Why didn't he tell me if he was planning on going down?" said Elgin crossly. "I wouldn't have wasted time talking to him if I'd known. I would have been talking to other people."

"I don't think he knew until after he'd talked to you," said Fran delicately.

"Oh," said Elgin. "That's all right then." He put that problem away and looked to the future. "So, who's taking his place?"

Fran was envious of his ability to do that. The issue was no longer relevant, so any questions about it simply left his mind. She was more the type to get to the bottom of things, and sometimes she wished she could just drop it and walk away. "Nigel has taken over Winston's debating duties," she said.

He didn't know what to think about that. Winston was good, so having him out of the picture might help their cause. But he had no idea what sort of debater Nigel would be. "Maybe I should go talk to him," he said.

"No, no," said Fran hastily. "I think we should go home and rest up for tomorrow." They said goodnight to everyone and went back to their apartment, where he lovingly brushed her golden fur until

she fell asleep.

Chapter Thirty-Six – Nigel's Debate

Effay, everyone was standing. That is, they were all upright with their feet stuck to the floor. It was nearly effortless, as they were crowded together supporting each other. As Frances looked out over her audience, she saw an interesting phenomenon. There were waves washing back and forth through it. The people reminded her of sea grass on the ocean floor, swaying in the currents. She guessed it must be an instinct to keep one's immediate neighbors roughly equidistant. As they automatically adjusted for changes in proximity, waves of motion went through them. The patterns of waves cycled between chaotic and coherent, at times random, at others orderly.

On Fran's right, though, with the yellow columns rising in the distance behind him, was Elgin. He stood at the edge of the crowd, feet planted, hands clasped behind his back, his dark eyes locked on her. The waves that came to him bounced off as if he were a rock, reflecting back into themselves. He anchored her.

At the back of the crowd, in the middle, were Stanton and Buzzard. Stanton, much like Elgin, was steady, not about to be swept up in such tomfoolery. Buzzard, on the other hand, was thoroughly into it. He had to stand an arm's length from Stanton because he was participating in the waves with such enthusiasm. He was like the tallest blade of sea grass, accentuating the motions of the others. He could obviously see the patterns developing in the waves. He could anticipate their actions and, when they arrived at his position, he could sway extravagantly in unison with them. With orange pillars behind him, his great big delighted grin was a beautiful thing to see.

This was why she loved Buzzard so much. What he felt always came out in his actions, and he usually felt something on the happy side. And more importantly, given her gift for profound empathy, the feelings he expressed were always the same as what she sensed. With her tendency to feel what she was seeing, it was a relief to have no conflict between those things.

Even Elgin, the best man she had ever known, wasn't entirely honest about what he was feeling. Not that she faulted that. It was just the normal social masking that people do to reduce the stress of constant close contact. In more important matters, she knew his feelings. With her mirror-touch emotions, she knew that he loved her with the same certainty that he knew it. The straightforward focus of his love for her was the same as his loyalty to his friends, his dedication to his work and his rock-like duty to the comet. Elgin was the bedrock that would never shift under her feet.

Frances' synesthetic talent gave her the gift of insight. That could result in satisfaction and joy, and just as likely in disappointment or pain. She accepted the bad with the good because she knew her responsibility to her gift. This burden made it all the better to find Elgin, a man who was better than he thought he was. And it made the lightness of Buzzard's spirit a welcome relief.

Looking at the people in front of her, their eyes so full of hope and dread, their attention focused so intently on her that they were unaware that they were swaying like sea grass, she was glad she had at least some respite from the responsibility. It gave her the strength to do what she needed to do now. Even though she desperately wanted to assuage their dread, to soothe the fear, she knew she couldn't. Drawing on the strength and support of her friends, she took a breath and plunged in.

With distant echoes of destruction still coming from the flashball gallery, she quietly told the people that more destruction was their only hope for survival. They had to overcome their conservative instinct and throw away a large percentage of their resources. It was as if, she told them, they had a life threatening disease and their only hope was amputation. "Far better," she said, "to lose a leg than one's life. Far better that we should lose the little comet, and survive as a people."

She showed some of the same videos as last week, and played some of the same audio recordings. Here she became icy cold and hard as frozen nitrogen. She spoke softly, but the weight of her presence commanded them to listen. Then she was quiet during the last desperate seconds of lost voices telling them to run, to hide, to disappear. And she left them with the terrible, banging silence that followed.

After a few seconds she began the final video. Buzzard's guy hadn't managed to get it done in time last week, partly because of the last minute addition she asked him to make. They had forgotten about the fate of the second comet that was in the inner system along with Red Comet. It was small, with only a few adventurers on it, and it was just one of so many tragedies. But she finally realized that it illustrated their predicament better than anything else she had.

In the original, Buzzard's guy had illuminated the trail their comet left as it went through the inner system. It was emphasized, both to make it show up in the video and to make people aware of their vulnerability. All the other important features were also highlighted. There was the planet, some minor moons, some asteroids, Red Comet and the Visitor and its modules.

In the new version they included the other comet. Before, it was just another disaster. Then Fran realized that the Visitor must have specifically searched for it. The Visitor, after finding Red Comet, must have looked for fresh trails and found the one left by this poor little comet. This version of the video showed that trail as well as Green Comet's. The implication was glaringly obvious.

"The Visitor found Red Comet and that led it to the other comet. In exactly the same way, our trail will lead it to us." The audience was with her. She just needed to wrap it up now. "It knows we're here. It has already shown that it destroys the comets it finds. To save our lives, you must vote to separate the comets. Unless you believe that the Visitor will decide that it's too much trouble to pursue us, you must vote to do the only thing that will save us."

She flew past Nigel as the audience thanked her with a polite round of applause. The waves had died down and they were more or less still now. Their nervousness from before was gone and now they were all concentrating seriously on the debate. Nigel congratulated Frances as they passed, then proceeded to the middle of the dais to do his duty.

Elgin thought he loved Frances, but his love for her broadened and deepened when he saw the way she talked to the people. She wasn't just trying to win them over, to make them see the truth of what she knew. And it wasn't just her loving concern for their welfare that made her speak so well. What he saw was her compassion for them. She felt their fear and confusion as if it were her own. She spoke not as someone with a message to impart, but as she would want to be spoken to. They could sense that. It was her compassion that would win them over. Elgin thought Frances was something special before. Now he knew that she really was the best woman in the universe.

And now it was Nigel's turn. It was time to find out if Winston's early hibernation would help their cause. To Elgin's dismay, it was very quickly evident that Nigel was an even more effective speaker than Winston was. He began with, "Listen," and everyone became very aware of the distant sounds of destruction. "They're so sure they know what's best for you," he said, "that they're smashing your beautiful flashball court."

He went on in that way, pointing out what they would lose, what listening to Frances would cost them. In a few minutes he had undone all the progress Frances made. Elgin scowled as Nigel enumerated the things they were being asked to sacrifice. "This Square," he said, "with these beautiful columns and friezes." He let them look around for a while. "This will all have to be smashed to pieces." Elgin was glowering.

Now Nigel indicated the big screen behind him, which was blank. "I wanted to use the same image as Winston," he said. "The smoke rings. Do you remember?" They did. "But I couldn't. It's

gone. I couldn't find even one image of the smoke rings anywhere.” People turned around to look at Buzzard, who fidgeted self-consciously. “As if it weren't bad enough that Winston was bullied into early hibernation,” people turned to look at Elgin, “they also had to take away the picture that he used.”

Nigel methodically went through what had been done, artfully allowing his audience to associate the badness with one or more of his opposition. The only exception was Frances. He instinctively knew that attacking her would not help his cause. So what he did was create the impression that she wasn't like the rest of them. That maybe she didn't really believe what they were making her say. That was so inflammatory that Elgin was set to jump up on the stage and put it right. But Fran caught his eye and gave a tiny shake of her head, so he stayed where he was, fulminating while Nigel wrapped up and the debate drew to a close.

Fran congratulated Nigel on his effective presentation. They shook hands at center stage, extending it until they were simply holding hands while they talked. They were both smiling and it was obvious that they were old friends, bearing no animosity even though they opposed each other in this critical matter. This show of reasonable behavior would, they hoped, set the tone for the people as they carried the debate through the next week. One week from today they would vote, and Green Comet's fate would be set.

Leaving Nigel, she made eye contact with Elgin as she descended from the stage into the audience. Some had left already, but most stayed. There was a feeling in the air that they weren't quite done yet, and they wanted to talk, and to listen some more. As she was being surrounded, Elgin appeared and took up a protective position just behind her shoulder.

The four of them had tea on the balcony a few hours later, and they tried to draw conclusions from the day. “That Nigel,” said Stanton, “is a pretty good speaker.”

Elgin growled, but Fran put her hand on his arm and said, “Yes, he is. I thought he discharged his duty very well.”

“That was a bit hard to take, though,” said Stanton. “Being singled out like that, I mean.” He looked at Buzzard.

Fran said, “I think he realized that was his only option. If he had tried to argue that the Visitor probably wouldn't bother, he would have been fighting uphill.”

“Was it wrong?” asked Buzzard. “Bad? Destroying the pictures. Was it wrong?”

“No!” said Fran and Stanton together. Fran continued, “You did the right thing, Buzzard. We know how hard it was for you. But it was for the best.”

“That's good,” said Buzzard. “All good, then. All done.” He was happy again. When he heard that Stanton and Elgin were going to destroy their work, he thought about what he could do. In many ways, predicting the smoke rings was one of his greatest accomplishments, so he chose to remove all record of it. Stanton and Elgin were sacrificing, so he wanted to sacrifice too. He could tell Stanton was proud and he saw respect in Elgin's eyes. But Nigel had made it sound selfish and wrong, so he needed to hear Frances tell him it was right. Now it was all right again.

“He's worse than Winston was,” said Elgin. When Fran looked at him he said, “No, I don't want to give him the benefit of the doubt.” He was scowling now, looking like a defiant child. “I know he's supposed to do his best, just like Winston did. But at least Winston stuck to the facts.” He crossed his arms, tucking in his chin. “Nigel used tricks. And he made it personal.” Fran could see that his righteous indignation was beginning to falter. She could tell that his dudgeon would give way to reason eventually. “It's just not right,” he finished lamely.

Stanton was quiet, calmly sipping his tea while he appeared to follow the conversation, but Fran could see that he wasn't entirely present. He must be thinking about destruction, she thought. He initiated the smashing of his ball with grim dedication, and she knew he would plan and execute the

ruination of everything else in Green Comet, but she sensed that his feelings were conflicted. He was a builder, a maker, not a destroyer. She knew he didn't have the surety of her knowledge or the clarity of Elgin's talent. He was with them purely based on faith. He trusted her judgement and Elgin's ability, so he was ready to act against all his instincts. And he was doing it quietly and efficiently, not showing the slightest ruffle of reluctance. She took him some more tea, and when he looked up to thank her, he saw that she knew. A knot uncoiled softly under his heart and he was sure again.

After their guests left, Fran and Elgin stayed up for a while. They had to clean the tea service and do a little tidying up, so they had a chance to talk, just the two of them, for the first time in hours. Fran knew that Elgin was having a problem with the apparent animosity coming out of the debates, but she also knew it wouldn't be resolved by talking about it today. It was an assault on his loyalty and his strong feelings about the safety of Green Comet. She knew he wouldn't do anything rash, but a full reconciliation would proceed at its own pace, over a much longer time.

As for Winston's early hibernation, and that of two or three other people that Elgin had talked to, she could see that he had an inkling that he might have had something to do with it, but he was rejecting the idea. It would take a lot of thought before he could consider the possibility that his passionate promotion of Fran's plan could have been misinterpreted so badly by the people he was talking to. He wasn't yet aware of the new thing his face was doing, so he had no idea what people were seeing when he talked to them.

There was something she could talk about, though, and the buzzing energy in her body demanded some kind of outlet. This mysterious energy was new to her. It only started to happen when she started doing the debates, and she found it stimulating. She felt buoyed up and optimistic. "I think we did really well today. I could feel it coming from the people."

"I did too, when you were talking, but it went away when he talked."

"Not completely," she said. "He just dampened it down a bit. It was still there." She nodded. "I think we did all right."

Elgin said, "Not so much we. It was you. All I did was stand there."

Fran's pupils dilated and her eyes glowed with a rush of love. She said, "By just standing there, you did more than everyone else combined."

"If I did," he said, "it was easy because I believe in you."

"If you didn't believe in me," she said, "I couldn't do it. Knowing that someone as good as you believes in me," her voice filled up her throat, "it lets me believe in myself."

He wrapped his arms around her, letting her feel small and safe. "I believe in you," he said, inhaling the smell of her hair. "I know you're right. I just want to help."

She took his hand, still tingling with the energy of the day. Leading him toward the bedroom, she said, "Come on. There's something else you can help me with."

Chapter Thirty-Seven - Separation

Fran was right to be optimistic, though just barely. The people voted for her plan by a simple majority of fifty-three percent. The ratio was higher amongst the children, at over sixty percent. People speculated whether it was simple devotion to Frances, or if children might fear for their lives more than they love their possessions.

Elgin asked them that very question when he and Fran visited the school to explain things to the children. By the time they got there, a few days after the vote, a much higher majority of them were agreed that this was the best course of action. "Why?" he asked them. "Was it Frances?"

The children answered the way a group of children does, tossing it around from one to the next, looking at each other, coming to a consensus. Finally one of the natural leaders took it and tried to summarize it. He said, "We figured it was better to do something."

While the others said, "Yeah," and made other sounds of agreement, Elgin said, "That was it? It felt better to do something rather than nothing?"

"Yes," said the boy, and they all looked at Elgin as if it was obvious.

"Okay," said Elgin. "Thank you for answering that. Now, do you know why Fran and I are here today?"

"You're going to explain why we have to destroy the school?"

That was a bit unadorned for Elgin, but he said, "Yes." He looked them over, then said, "I think you know already, don't you?" They nodded so he asked, "Do you have any questions, then?"

The spokesperson said, "Yes. Do we get to help?"

They held their breath until Elgin said, "Of course." Then there was a flurry of little voices who all wanted to be the first to use Elgin's mechanical man.

Fran laughed and Elgin couldn't help but smile. "Well," he said, "I'll talk to some people. We'll have to see if it's all right," he added over their cheering. "But if there are no objections, then all we have to do is find the time."

"I can't wait to smash my desk," said one child.

"Me too!" said another.

Elgin had to interrupt. "We won't be using it here," he said. To their quizzical faces he explained, "There's not enough room in here. You know how big that thing is. Can you imagine swinging its hammer in here?" Trying to imagine it put them in fits of laughter. "No, we'll have to do it someplace where it's more open. Like the corridors or the Square."

That was all right with them. "I'm going to smash the columns," one said, and it began a competition for the most spectacular smash.

"Besides," said Elgin, "in an open space like that, you can walk around." More laughter as they imitated the big stick man walking. "Slower," said Elgin. "Its movements have to be slower because of inertia."

A little more play acting, then the spokesperson asked, "Are we really going to smash everything?"

"Effay," said Elgin. "Some stuff we're going to hide, like valuable equipment and resources. But we can't hide everything, so we have to try to make it look natural." He noted their concerned expressions. "Don't worry," he said, "we'll rebuild it when we get up again."

"Can we help to rebuild it?"

"Do you want to?"

"Yeah!" they shouted in unison.

"Then you can help me rebuild it," said Elgin. "I'm an engineer, so I'll be involved for sure."

"You're an engineer?"

"Yes. I work with Stanton and Buzzard."

"You work with Buzzard?" The children were impressed. "Buzzard the flashball player?"

Elgin and Fran smiled at each other. "Yes I do. And I play flashball with him too. We're both on the Harriers."

"You're on Buzzard's team?" They had liked Elgin well enough before. Now they were in awe of him.

"You like Buzzard a lot, don't you?"

"Yeah!"

"Well, maybe I could get him to come along. That is, if I can get hold of the 'smasher.'" They cheered excitedly.

The children got their wishes. Both of them. Elgin was able to get the smasher – everyone was calling it that now – for a full week for the exclusive use of school children. In part, it was a kind of reward for the good job they'd done breaking up their school rooms. They followed instructions perfectly. They left no right angle intact, nothing that looked the least bit artificial. They'd been told that the Visitor used radar with a frequency of forty gigahertz, which gave it a wavelength of about three-quarters of a centimeter. They were intent on breaking everything down smaller than that, until they were told that it might make the Visitor suspicious. They did a good job and they were thrilled to be allowed to use the smasher. Even more exciting than that was the fact that it would be Buzzard teaching them.

Elgin and Frances watched from their balcony as, bright and early on the first day, Buzzard walked the smasher into the Square to the wild cheering of a big pack of children. He demonstrated for them for a while, walking and moving his arms so they could get a good idea of what he was doing. Somehow, even in a rigid, arthropodic machine, he still managed to move with a hint of his characteristic fluidity. Fran pointed it out and they both had to shrug. It wasn't something you could explain. It was just Buzzard.

The real fun began when the children took their turns. The order was established by a lottery, so they all knew when their turn was and there was no jostling for position. It started with each one getting a five minute familiarization session. That would be enough to learn how to move in it, but that's all. It would leave enough time for two more stints, so they could do something effective in their allotted time and not feel as though they wasted it all learning. It also took advantage of the brain's ability to integrate a new skill between practicing it.

Watching the antics of a big machine, the two watchers couldn't help thinking about that other one, the von Neumann machine that they were calling the Visitor. This machine, the smasher, had no independent volition. It required an operator before it could do anything. That led Elgin to wonder if there was any sentient intelligence motivating the Visitor.

"I don't think so," said Fran. "I could be wrong, of course. It might be controlled by organic beings." She shook her head. "It doesn't feel like it, though."

"What you say sounds right to me," said Elgin.

"It never once tried to communicate with us," said Fran. "And those images. It doesn't look as if there's any provision for life support there."

That was true. The pictures showed machines of stark, utilitarian efficiency, with no concession to the frailty of organic beings. The smasher, on the other hand, was obviously built to work around its operator. It was nothing like the Visitor, and Elgin had to admit again that they weren't going to find any comforting familiarity in the truly alien invader. That made him feel cold and isolated. And

exposed. A chill penetrated to the center of him and he felt vulnerable for the first time. "Rannie?" he said. "Do you think we'll make it?"

"I don't know," she said. "Can't you tell?"

"No."

They watched Buzzard and the children, marvelling at his way with them. Each one took their turn in an orderly fashion, paid attention and learned what he was showing them, and finished grinning happily. Stanton, who'd accompanied Buzzard as an extra set of eyes, didn't have to do anything. They didn't know it, but he was doing more than they realized by just being there. If it had been Buzzard alone then the fun and giddiness might have spun out of control, but Stanton's presence kept a governor on it. It wasn't just that the children felt constrained under his eye, it was about Buzzard too. They felt that he was more like them than he was like a grownup, and they sensed that Stanton was his grownup. They kept themselves under control because they didn't want to get Buzzard in trouble.

Fran and Elgin saw Maria climbing into the smasher and they sat up to pay attention. She made some experimental movements, then she turned and walked across the floor and up the orange wall, Buzzard flying along beside her. She started across the ceiling, then stopped partway. Buzzard stopped too, ready for whatever she might choose to do next. So when she extended one of the machine's arms and opened its hand, he got it right away and climbed into it. With him standing on her palm, she walked the rest of the way across the ceiling, down the green wall and back to her starting point. There she allowed Buzzard to disembark, turned to face her spectators and made a low, sweeping bow to a warm round of applause.

Elgin looked at Fran and saw that she was smiling happily. Two people she cared for, that she had a special protective feeling for, had just shared a memorable moment. She was greatly enjoying it and that made Elgin feel good. "Sometimes," he said, "something happens that just makes you glad to be alive."

"Yes," she said, blinking away tears. "Now I really hope the Visitor is rational."

"Oh?"

"Yes. If it's rational then it won't pursue us beyond reason." Her voice grew distant. "If it's rational then all it wants to do is claim the resources in the system, and it won't go out of its way out here, where resources are poor and thinly distributed."

"I see what you mean," said Elgin. "Here's hoping that whoever created the Visitor programmed its artificial intelligence to be rational." He added, "Even if they couldn't prevent it from going insane."

The people who voted against Fran's plan were given the option of going down first. It seemed only reasonable that the ones who voted in favor should be prepared to do the majority of the work, and to be last in line for hibernation. That was somewhat how it went, but a large percentage felt the pull of duty in spite of having voted against it. As the numbers dwindled, as living areas were closed and broken up, they found that they had to run a lottery for the privilege of staying up and doing the work.

Those who were going down were celebrated with ceremonies. People needed to say good-bye. No one was sure they'd ever see each other again.

There was a lot of work to do. Not only did they have to break down any structures that would show up on the radar of the Visitor, they had to hide valuable equipment and resources as well as make preparations for the encounter. To hide things they devised a method of arranging the ice around them in such a way that radar was refracted and couldn't return a useful signal. Such areas existed naturally in the comet so they just had to improve on what was already there. This technique was used to obscure the Hibernarium, to hide the things they couldn't replace and to protect the living area of the small crew that would stay awake to keep watch.

To prepare for the encounter they needed to set up a system of observation and surveillance so they could monitor what was happening. They needed to watch the little comet, which they were offering as a sacrificial decoy. They needed to be able to see the Scout, as they were now calling their expected visitor, and observe its actions. To do this they grew thin fibers that terminated in receptors, optical or radar, on the side of their comet that would face the Scout during the encounter. The fibers were too thin to show up on radar, and the receptors, though there were millions of them, were small and randomly distributed. If they were detected they would appear natural and completely unremarkable.

Finally there was the particle accelerator. It was like the one they used for communication, but it was bigger and could spew enough gold with enough energy to destroy the Scout, even at the ten million kilometers that they estimated would separate the comets at the time. They hoped they wouldn't need to use it, but it would be there if things got desperate. Since the destruction of its Scout would undoubtedly draw a reaction from the Visitor, it was only for the direst emergency.

Based on exhaustive analysis of everything they knew about the Visitor and the invasion, they estimated that the Scout would reach their position in twenty-three years, plus or minus twenty percent. Their result was subjected to deep analysis by Buzzard – ten times, all good – after being passed by Elgin. The planning committee, with its new chair, Nigel, on the recommendation of Frances, set the deadline for the completion of their preparations at eighteen years, four months and three weeks after the discovery of the second comet in the inner system. She thought that would have triggered a search for them, so it was her starting point. For the sake of prudence she chose the lower end of the error bar on the estimate.

They decided that the best way to separate the comets would be with an explosion. They would blow it off on the little comet's side of the compression zone, so at least they could keep some of its material. Once separated, rockets would drive the little comet toward the Sun, to close its orbit and allow it to return to the inner system one day. Rockets on the big comet would drive it away from the Sun, making its orbit increasingly hyperbolic and ensuring that it would never go back. They would turn off the rockets on Green Comet a few years before the expected arrival of the Scout to allow their ejected material to dissipate enough to not incriminate them. They would continue using the rockets on the little comet long enough to mask the ejecta of Green Comet, and long enough to attract the attention of the Scout.

The separation scar on Green Comet was disguised to look like an ancient impact scar. When they turned off propulsion and initiated rotation in the comet, they put the scar on the side away from where the Scout would be. It had a basic rotation of about twenty hours and an additional radical precession that looked as if it was caused by the impact. The precession would go through one complete cycle in about a week. The axis of the main rotation was always in direct line of sight with the little comet, so they were able to situate the particle accelerator there and have continuous visual contact with their potential target. All these arrangements meant that the Hibernarium and living quarters would never point directly at the Scout at any stage of the comet's rotation. This would decrease the likelihood of discovery as well as minimize possible damage from the ionizing radiation of the Scout's powerful radar.

Elgin had his dream again. He was outside in the vacuum, and he was really big. It was something like being in the smasher, only much bigger and more agile. Once again he was playing flashball, just as in the first dream. It was different this time, though. The dream was longer and more detailed, and he felt much more familiar with his surroundings.

He took the comets in his hands and snapped them apart. They separated cleanly. He looked around, but there was no one to pass it to. In particular, there was no Buzzard to take it and make the flashing, cracking, game-winning throw. So he reared back and flung the little comet with all his might in the direction of the distant Sun. It flared to bright yellow, but it never flashed white, and in the distance, almost too far to see, something dark and shadowy caught it.

He awoke with his heart pounding. He must have cried out or thrashed around because Fran was awake and holding onto him.

"Did you have a nightmare?" she asked.

"No," he said. "Not exactly." The images of his dream were still vivid and partially obscuring the bedroom. The wall was frosted with stars, one of them brighter than the others. A dark form moved, occluding the Sun.

"Do you want to tell me about it?"

He shook off the images, returning to her warmth, to her proximity and her aroma. "Yes, okay," he said. He described his dream while she listened, quiet and attentive as he groped for every detail. He thought if she knew enough she'd be able to figure it out.

"You were completely alone?"

"Yes. It felt as if there should be someone there. Someone to pass it to, you know? But there wasn't." He felt a chill. "Except for the thing that caught it. I'm guessing that was the Scout."

"And this time you threw the little comet. Last time you were playing flashball with a ball of ice."

"That's right." The dreams, though similar, were quite different when you looked at them.

"So," he said, "do you think the first one was a premonition?"

She smiled at him, her pragmatic engineer, looking for a magical answer. He caught the look and blushed ferociously, but still waited for an answer. "Okay," she said, "I think it's your talent as usual. I think it was the synergistic integration of your synesthetic senses, and that allowed your brain to take the data available to it and perform its normal assessment and analysis. It didn't have much data so the answer was accordingly vague and suggestive – a dream. But I think you knew even then that you were going to have to take charge and do something hard for the comet one day."

He nodded. "I see," he said. "So, is that like a premonition?"

She laughed and pushed his chest, but she said, "Yes, I guess it is." She considered it some more. "Alternatively," she said, "your dreams are re-using their themes and it's coincidental."

"Coincidental?" He sounded disappointed.

"Sure," she said. "The image was perfectly plausible for the first dream, and more so for this one."

"You're right," he said, sighing.

She laughed.

When the little comet was loose, they applied thrust tangential to the big one, to move away without blowing off a lot of loose material. Once clear, they would change the vector. The separation marked the beginning of the most difficult and the least popular project of the entire plan. It was time to move the bodies of the suicide victims from the Hibernarium to the little comet.

They reasoned, quite coldly, that the Visitor would be more convinced by their deception if it found evidence of deceased people. The plan was to make the separation scar look like the result of an explosion on the little comet. They would release a few pieces of metallic debris around the comet, and arrange the thirty-one bodies to suggest the aftermath of a catastrophe. It was one piece in many to lead the Visitor to believe that it had found what it was looking for.

Naturally Elgin took charge. He knew that no one would want to do it and, to avoid the need

for any coercion, he took on the responsibility. There was also the fact that it was part of Fran's plan and he, as her greatest supporter, felt that he should show that support by graphic examples. He had smashed his own work when he destroyed the struts on Stanton's ball, and now he would take on this unpalatable assignment.

The friends and relatives of the dead all agreed, some after gentle encouragement by Frances, to release the bodies for the purpose. In an odd way, their sense of loss and futility after the suicides was partly assuaged by the thought that their loved ones could now make their deaths at least a little more meaningful. No longer just the tragic result of despair, their sacrifice could now possibly save Green Comet.

They didn't just pull the bodies out of the Hibernarium and haul them over to the little comet. They had a public ceremony for the victims, where they celebrated their lives, mourned their deaths and honored their sacrifice. Each one had a private ceremony for their loved ones, and the bodies were transported, one by one, through the public areas of Green Comet on their way to their final resting place. Their names would be remembered and their families would have a good legacy to carry on with.

These rites and ceremonies and gestures of solidarity were good for everyone, whether they were close to the victims or not. They were also good for the people involved in the transportation detail. These were dead bodies after all. They had killed themselves, and that was a constant reminder of the reason behind it all. Elgin tried to not let it show, and he was mostly successful in that. His discomfort was never obvious to the families, nor to the people working with him. The job proceeded smoothly. But there was no hiding it from Fran. She could see that it was bothering him.

"How's everyone holding up?" she asked.

He looked at her, then said, "Oh, you mean my crew?"

"Yes," she said. "This must be hard on them."

"Oh, they're fine," he said. "No one's complaining."

"No, they wouldn't, would they?"

His senses were alerted now. He knew she was telling him something. "Do you think I should talk to them?"

"Or get them to talk to you, and to each other," Fran said. "No one has ever done this. Your crew is unique. The only people who will ever understand what you've gone through is each other."

"That's right," he said, his mind already with them. "That's right."

Shutting down the comet proceeded steadily and methodically. As the volume of living area decreased, the number of waking occupants went down in step with it. There was no panic because they had eighteen years, so the mood was one of discipline and determination instead. Everyone knew when they were scheduled to go down, so they tried to contribute as much as they could in the time they had.

The Hibernarium was overflowing. It was built to hold eight thousand sleepers and they were pushing that up to ten thousand. Rather than try to build two thousand more cells, they decided to store the extra people on an ad hoc basis. The regular sleepers were in individual cells, arranged in a series of honeycomb-like structures. They were infused with molecular scale robots that moved through the body doing inspections and repairs. The little machines were transported around the circulatory system in liquid nitrogen, with the bodies connected to the supporting honeycomb by tubes and wires.

The additional sleepers were simply stuck on setae covered walls, the whole purpose being to keep them safe and out of the way. They didn't have any molecular machines patrolling inside them, and they weren't connected to anything by tubes or wires. They were stored "dry." But they were each sealed in their own impermeable membrane to prevent dessication. The plan was to move them into

the cells as they were vacated by wakers when the crisis was over. A few empty cells were set aside for contingencies.

Maria and Buzzard spent a lot of time together. Since she carried him in the hand of the smasher, they'd become fast friends. The difference in their ages, he being about twice her age, meant nothing to them. They hung out and did things that two adolescents would do. They might be seen together anywhere in the remaining habitable areas of the comet, laughing over something or deep in conversation, sharing unknown profound thoughts. Everyone could see the bond forming between them and they thought it was good, including Tomas, Maria's father. He knew Buzzard and he knew his daughter, and he knew there was no danger. If anyone had been in danger, knowing how strong and capable Maria was, he thought it would be Buzzard. But this was not a dangerous liaison, just a growing friendship.

When the time came to release the little comet, that young friendship was tested severely. They had been continuing to work on both comets as if they were still one, with much commuting back and forth. Eventually, though, the comets got far enough apart to make that impracticable. Not only were the commutes getting too long, the time was getting shorter and the chance of exposing themselves greater. So the little comet was set free to begin its independent existence, with a crew of thirty people to maintain its systems and ensure that it met its objective.

Prominent among that crew was Buzzard. Maria didn't want him to go, and then she wanted to go with him. She knew right away that convincing him to change his mind was impossible. He would have thought about it in his way and then his decision would be immutable. She also knew she wouldn't be allowed to go with him since she was still a child. Her impulse was to resent him for it and to wonder if he was no longer her friend. But she knew he was, and in the end she was proud. When they saw him off for the last time she was smiling and in tears, on one side of her Tomas, his face sad for her, and on the other Stanton, his face sad for Buzzard.

The years progressed in their unstoppable way. The comets got farther apart, the little one's orbit closing and the big one's opening. At first there was regular communication by radio, the disk of the little comet being large enough that they didn't worry about radiation leaking around it and heading toward the inner system. That stopped soon, probably sooner than necessary given their excess of caution, and only the little comet continued to use radio, and only in squirts of white noise. The big comet went completely quiet, indulging only in rare, brief cosmic ray messages.

Their work progressed, the animate population of Green Comet decreasing steadily. They got down to one hundred fifty people with five years left, and they maintained that number for most of the rest of the time. For almost five years the total waking population of both comets was one hundred eighty, and they were all engaged in the same activity. The majority of the work was done and they were in maintenance mode, tending to and refining their arrangements.

Finally the lower limit on their estimate arrived and they had to act as if the Scout could show up any day. Really, they had to act as if it was already within view, and they had to curtail their activities with the assumption that anything they did could be observed. In practice, they ran the ferry back from the small comet, and on the big comet they began processing the last wave of hibernators.

Maria and her father were among the last to go down, with the special dispensation given to those who had someone coming back from the little comet. She was certainly not a child any longer. As they all had, she had aged and matured considerably during this time. She was thirty years old now, older than Buzzard was when he left. He would be in his forties, still considerably older than her, but no longer an adult to her child. She was filled with anticipation and fear as she waited for the ferry to dock and Buzzard to disembark. Would he be the same? Would they be the same? Would they still be

friends?

It was a painful disappointment when she didn't see his great big happy face. She unconsciously reached out and squeezed Fran's hand, where they stood waiting with Stanton and Elgin and Tomas. While other people had their joyful reunions, Maria and her friends waited with growing confusion and dread. If she hadn't been so intent on that she might have noticed a few other people in the same state. She didn't and neither did Stanton, who was also focused on Buzzard, nor did her father who was focused on her. Fran did, and because of that so did Elgin. It looked as if Buzzard was one of a small group that wasn't returning.

Finally the ferry pilot broke away from those welcoming her and came over to Maria's group. She first directly addressed her and Stanton, saying, "Buzzard and a few others stayed behind." She waited for their startled response to die down, then added, "Maria, he said to tell you to wait just a little longer."

"Does that mean they're coming on another ferry?" Hope made her voice quiver.

"No," said the pilot. "There won't be another ferry, I'm sorry." She politely endured another burst of questions. "I'm sorry. They wouldn't tell us what they were up to. We tried, but they just wouldn't say." She turned to Stanton. "He said to tell you to watch and that he hoped to make you proud."

"Watch what?" asked Stanton. "Proud of what?"

The pilot shrugged helplessly and turned back to Maria. "He said to tell you to go down and he'd see you later." She shook her head and shrugged again, wings and all. The look on her face said that she didn't see how Buzzard could be so optimistic. As far as she was concerned, the five they'd left behind were on a suicide mission and this was all false cheer. She turned to Elgin. "He had an odd message for you. I have no idea what he meant by it, so I'll just give it verbatim." Elgin nodded. "He said, 'All done. All good. No magic.'" She peered into his face to see if it meant anything to him, but she didn't see anything. Finally she said, "Well, I have some other people to talk to, then it's off to the Hibernarium for me." They all thanked her and she headed off in the direction of some other people looking lost and confused.

Everyone instinctively looked at Frances, knowing that if any sense could be made of it, it would come from her. She took Maria's hand, still clutching hers, and pressed it to her sternum. Looking at Maria and Stanton, she said, "Buzzard obviously put a lot of thought into this. I think the best thing we can do is take his word and hope for the best." They nodded and looked somewhat surer, but by no means confident.

Maria was obviously hurt. Why didn't he tell her? What was he doing that he couldn't even tell her? She caught herself before letting that go too far. She knew from what the pilot said that the five people who stayed behind on the little comet must have a plan. She knew Buzzard well enough to know that if there was a plan then it would have been subjected to his merciless analysis. When he told Elgin, "All good. No magic," it meant he thought the plan would work. As far as he was concerned, he'd told them all they needed to know. She smiled a painful smile and sent her love and support across ten million kilometers of lethal vacuum. "This had better work," she whispered. "You had better come back to me, because you're going to have some explaining to do."

Maria was among the first of the last to go down. Frances was there as she closed her eyes. She didn't promise that it would be okay, or that Buzzard would come back, or even that she would wake up again. Fran didn't know and Maria was sophisticated enough that false assurances would be worse than nothing. Fran was just there to support her and to cry with her. For Maria, with her friend on one side and her father on the other, it was enough.

Finally the day came when the last hibernator was tucked into the Center by Elgin and the

Doctor, two of the five. The rest of the crew consisted of Frances, Stanton and Nigel. Frances because it was her plan, Nigel because he was chair of the planning committee, Stanton because he was chief engineer and the Doctor because they needed a doctor. Elgin, of course, was there because Frances was.

Chapter Thirty-Eight – The Scout Arrives

The observation post was an irregularly shaped cavity right at the end of a corridor. Green Comet's habitable area was extending in that direction and the cavern was about to be modified and incorporated when the Visitor put such plans on hold. Now it would be the comet's only habitable area for the next few years.

It was seven kilometers from the Center, where everyone was sleeping, connected by a series of natural fractures in the body of the comet. On the scale of the comet, the fractures were trivial and shouldn't catch the Scout's attention. They were part of a network of faults in that area, only one of a number of such networks in the comet. Trivial on that scale, it still provided unimpeded passage for small things like people. Of course, it wasn't pressurized so they would have needed pressure suits if they wanted to use it, but with the corridors gone it was their only way of getting around.

Like the Hibernarium, the observation post was protected by an arrangement of broken ice that would refract the Scout's radar. It was a random looking jumble that nevertheless produced a very specific result. The Scout would not be able to resolve any definite images of the space behind the shield. No matter how many times its radar passed by, it wouldn't be able to collect enough data to see what was there. It would find the same thing at the Center and several other unrelated places throughout the comet. Overall, though, it would be able to see over ninety-nine percent of the comet, so it would be encouraged to believe its investigation was sufficiently thorough.

Their enclosure, which was only a small fraction of the size of the cavern it was built in, was constructed to mimic the shape of the larger cavity. They hoped that by blending in with the natural form they would stand out that much less. They didn't exactly replicate its shape on a smaller scale, rather they used the suggestions of similarity that are often found on different scales in natural formations. As Stanton put it, they just, “slid things over a few degrees here and there.”

It contained quite a large volume for their living area. There was no need to skimp, given what was available, and they were planning to spend a long time there, so the more the better. If the Scout arrived on estimate they would be there for over four years, and given the error bars and uncertainties it could be as long as ten. In practice, if the Scout didn't show up at all they didn't know how long they would go on just to be sure. They needed plenty of room to protect their mental health during the long confinement. The Doctor said, “We need room to stretch our wings, in every sense.”

The main part of the observation post was relatively small and, to everyone's amusement, they spent most of their time there. It was the operations room, containing most of their monitoring equipment, and it was natural for them to be there. It was roughly rectangular, although the top was highly irregular for camouflage. It was about five meters wide and eight long, with the equipment collected at one end.

The rest of the space was taken up by the other room. That's what they called it. There was the ops room and the other room. Its minimum dimension was ten meters, but in reality it was much bigger where the ceiling angled upward. They had enough room in there that they could play catch with a flashball when they needed the exercise. It housed all the activities that weren't strictly operational, such as eating and sleeping, although they ended up snacking and napping in the ops room much of the time.

To conserve resources and preserve their sanity, they weren't going to spend all of the time awake. There were to be three people in light hibernation at all times, with two awake and on duty. Each person would be awake for two months and asleep for three, on a repeating cycle. They would

spend one month with each of two partners, overlapping their shifts. The schedule was left to an algorithm to draw up, reasoning that any combinations it could come up with would work at least as well as whatever they might try to arrange themselves. It wasn't entirely random, though. Stanton altered one variable to ensure that Elgin would overlap with Frances. No one objected to that. None of them would have it any other way. As for everyone else, they were all happy with whatever they got. The first shift went to Elgin and Stanton. After one month, Frances would come up and Stanton would go down. Next up was the Doctor, and finally Nigel.

Elgin would come to think of those months spent with Fran as his golden age. He thought he'd already entered it when they met and she, inexplicably, stuck with him. Anyone looking at them would have concluded the same thing. It was very special, but these months spent alone together were so much more. They provided the opportunity to experience a lifetime of intimacy in a few focused days. Elgin would look back on them with gratitude and regret.

Right now, though, he was on shift with Stanton again, just beginning their seventh stint. The brief precautionary overlap with Nigel was done, Elgin was declared officially awake and fit for duty, and Nigel was beginning his three months of down time. They were a week into their shift and they were doing their daily calculation and plotting of Stanton's bubble.

"I can't believe we almost forgot it," Stanton mused for the umpteenth time.

"Me, neither," said Elgin. "I guess everybody thought everybody else was taking care of it." He started the program and they watched as it constructed the diverging paths being followed by Green Comet and Stanton's bubble.

They were never in any real danger of forgetting the bubble. It just slipped everyone's mind for a while. They remembered and were about to smash it when Frances suggested waiting. Then, over the years, people visited the bubble to think, often just before going down to the Center. Most of them left mementos in the bubble. When it was time to finally deal with it, Fran convinced them to remove it intact, to send on its own, independent exploration of the galaxy.

"Do you think anyone will ever find it?" asked Stanton.

This wasn't the first time the question was asked, by Stanton or anyone. Probably everyone on Green Comet had wondered about that. It was the kind of wistful exercise of the imagination that came naturally to them, given not only their nature but their unique circumstances. Buried under the lightness of speculation was a darker, morbid motivation. It was possible that they would not survive this, and Stanton's bubble might be the only enduring evidence of their existence. That little ice sphere and its eclectic contents could end up being the only thing left to tell the universe that they were here. With his mind full of those thoughts yet again, Elgin said, "Probably not."

Stanton nodded. "Yeah," he said, "but it's nice to think about."

Elgin had a new thought. "The odds of happening upon it might be close to zero," he said, "but we know where it is. Maybe after this is all over we could mount an expedition to recover it."

Stanton looked up with a flash of hope, then he laughed at himself. "I doubt that will be a priority," he said. "If we get through this we're going to have a lot of other work to do. More important work." He shook his head. "Retrieving the bubble wouldn't be a priority if I was in charge."

"Well," said Elgin with a grin, "you won't always be in charge. Maybe you'll wake up after an eighty year nap and your bubble will be back."

Stanton snorted, but Elgin could see the idea pleased him.

They were interrupted by a quiet but insistent beeping. "Radar," said Elgin, pouncing on the monitor. "Thirty-nine gigahertz. It's the little comet." It was beginning.

The plan was for the little comet to probe the Scout with radar when it was within a few light seconds. That was assuming that they would detect its arrival ahead of time. If it surprised them, then

the radar would come on immediately. Not that they thought it would do them any good. They knew that anyone who'd used radar on the Visitor before was quickly destroyed. The purpose of this probing was to hit the Scout with a powerful beam, knowing that some of it would reflect to Green Comet. This would both alert them and provide them with some data. This was supposed to happen automatically, but now they assumed it was being controlled by Buzzard and his crew.

The radar signal lasted for approximately seven seconds, and before it ended their telescope picked up a flash on the little comet. "One second," said Elgin. "It took the Scout one second to target the radar source."

"That's assuming a distance of three light seconds," said Stanton. He consulted the radar data, doing a quick mental calculation. "That's about right. They're right on the plan."

"Look at this," said Elgin. There was more information, received by their cosmic ray antenna. "It's a bunch of data about the Scout. Position and momentum and so on." But before they could absorb that, there was more radar. In the next two to three minutes they received sixteen radar signals in total, then it all stopped.

That's when Elgin pushed himself away from the console. "Time to wake everybody up," he said, flying into the other room. He left Stanton scanning their instruments intently, and he knew his mentor and friend was filled with both hope and fear for Buzzard. Elgin couldn't see much cause for hope. It looked as though whatever defences the little comet had were spent, and now the end was just a matter of time.

It was hard to piece together, especially accounting for the extra three second delay with the reflected radar. As a working hypothesis, he imagined the radar was first, then it would be destroyed by the Scout, followed by the cosmic ray message. Repeated for a total of sixteen times, the net result was a lot of data for Green Comet, but Elgin couldn't see how it helped the little comet at all. He was churning through that line of thought repeatedly as he set the controls to begin the process of waking the rest of the crew. Realizing he was distracted, he went over the procedure until he was sure he had it right, then he went over it again. All the controls were properly set, all the gauges were in their nominal ranges and all the indicators were green. He went over it one more time, and then headed back to the ops room. There was an hour until the next time the automated re-animation procedure would require intervention again.

"Look at this! Look at this!" said Stanton as he came in. It was a simulation of the event, using the available data, including imaging of the Scout after their optical telescope found it. It added a whole new angle to Elgin's hypothesis, because there were also flashes on the Scout. Little comet was fighting back. They cheered and celebrated their friend's little victory.

"So," said Elgin, "first there's the radar from the comet, then the Scout kills the radar, then something from the comet, maybe a laser, shoots the Scout's weapon, and finally there's the cosmic ray message."

"Yes," said Stanton, "only I think the laser self-destructs when it fires, and sends the message at the same time."

"Oh, yeah. I remember hearing that the power of a laser is limited by not wanting it to destroy itself."

"That's right. So Buzzard has pushed it beyond the limit, probably knowing that the Scout would destroy it right away anyway."

"And he used the pulse of power to block any possibility of the Scout detecting the cosmic ray message." They watched the simulation in silence. It was improving with each repetition, as the computer ran more thorough analyses on the data. Elgin added, "Although, with that explosion, I don't think it would matter if the Scout intercepted the message. It probably wouldn't realize it."

"No," said Stanton. "It would just look like debris from the explosion." He pointed at the

screen. "And look here. It shoots at the laser, even though it has already blown up."

"You're right," said Elgin, pondering. "Hm. I think that says something about the Visitor, or at least the Scout. We'll have to remember to point that out to Fran when she wakes up."

"Right," said Stanton. "And the fact that it reacted the same way every time. Each time it shot a radar it lost the weapon to return fire, but it never altered its behavior."

"Sixteen radars and sixteen lasers."

"Actually, that's the funny thing," said Stanton. "Only fifteen lasers."

Nothing happened for a long time. The computer continued to refine its analysis, but with a lack of new data it wasn't able to show them anything different. The Scout continued to get closer to the little comet, but there was no more activity between them. They could tell that the Scout was probing the comet with its radar though, because they were getting the reflections. They studied them intently, hoping they might pick up some indication of the people there. At the same time they were hoping the Scout wouldn't, an impossible conflict of desires.

A chime sounded from the other room. Elgin tore himself away, saying, "I've got to go stir the soup," meaning it was time to go attend to the wakers. He flew out of the room.

The sleepers were almost up to temperature now. It was time to change the mixture of chemicals, to allow the metabolism to find its own equilibrium and to let the brain become active again. He entered the new settings and then checked the readouts to ensure that the automatic system did the right things. He had to monitor them for fifteen minutes to make sure they stabilized before he could leave them again. He spent the time watching Frances, pleased to see the color and vitality return to her skin and fur. With a mixture of chemicals keeping their re-activated brains in a somnolent state, Elgin left them to continue their recovery and went back to the ops room.

At that moment Stanton cried, "No!" Elgin hurried back in and found Stanton with his hands covering his head, and he saw a scene of chaos on the monitor. Where the little comet had been, there was a cloud of snow and, as they watched, the comet came out of the cloud in two halves. It was obvious that the Scout had attacked with a vengeance.

Stanton covered his face and Elgin heard his soft, "Aw, Buzzard."

Chapter Thirty-Nine – They Lose Buzzard

The wakers were sitting around the table in the other room. They weren't doing much yet. There was no talking. They weren't even looking at each other, or anything else in the room either. Their eyes were open and the visual signals were getting to their brains, but it didn't have much to do with what they were seeing in there. The dislocation and disorientation weren't nearly as bad as they were after full hibernation, but they were still there.

Elgin was sitting with them, waiting for them to become lucid. It only took three or four hours rather than three or four days, but it was still inevitable and couldn't be hurried.

Stanton was in the ops room monitoring the activities of the Scout, and poring over the data, looking for anything that might give them hope that their friends had survived. He wasn't finding it. Instead, he was witness to the Scout's systematic destruction of the little comet. It was blasting big chunks of it into smaller chunks, then blasting those into smaller chunks again. Watching it, Stanton thought it looked obsessive, or even insane. Long after it was obvious that nothing living could have survived, it continued pulverizing the remains of the little comet. He smiled a small, painful smile. "I don't know what you did, Buzzard," he whispered proudly, "but you really seem to have pissed it off."

Back at the table the wakers were sitting, each with a cup of iceberry tea between their hands. Nigel's mouth was open, making him look a bit stunned, and that pleased Elgin. Argue against Frances would he? Making it personal, too. Well, just wait until you wake up. Then you'll see how wrong you were. But then Elgin remembered what it had cost to prove that Fran was right. His mean joy died and he reached out and gently lifted Nigel's chin.

Nigel swallowed and focused on Elgin, who could see awareness in his eyes for a second or two before it went away again. That was an indicator that he would be coming out of it soon and indeed, over the next few minutes his eyes oscillated between a vacant stare and intelligent focus. At last, during the occupied moments, his throat and jaw began working as he tried to speak. Elgin reached across the table and patted his hands wrapped around the cup. Nigel, after a pause, looked down and, after another pause, slowly lifted the cup to his face. He took a small sniff and his expression intensified. A large drink stayed in his mouth until his throat remembered what to do with it, then Elgin saw the jolt as his body welcomed the warm liquid. As he thirstily attacked the rest of the tea, Elgin glanced to his right where Fran was beginning to stir.

The first thing he saw was her shining golden eyes locked on his, the light of awareness in them, along with what he could only interpret as knowing. All that in a second and, as she cycled away, potent sadness.

Across the table, Nigel was awake for sure. His concentration still wandered, but it remained in this world, and he had pulled himself together enough to croak, "What?"

Elgin looked at him and said, slowly and clearly, "It's happening." He waited until that registered, then he pointed to his left. "Watch the Doctor." When he was sure that was understood, he turned back to Fran. He looked directly into her eyes, so each time she surfaced she would see him right there. He reached out so his hand was touching hers, and watched her rejoin the world.

In his mind's eye, Stanton could see the bodies floating amongst the debris. His mind's eye shied away from anything that looked like Buzzard's body. All the while the Scout was motionless in an expanding field of rubble. Since it fired its last shot it hadn't done anything, as far as Stanton could see. He wondered what it could be doing. Was it scanning the remains of the comet, looking for signs of life? Surely that couldn't take long. He couldn't say why, but he got the impression that it was waiting. What would it be waiting for? Reinforcements? No, definitely not. He shook his head and

scowled at the image on the monitor. "What are you up to?" he growled.

At the table, Frances was working up to talking. She'd had some tea, with a sensuous shiver of appreciation, and now she was forming the question that Elgin anticipated and dreaded. Finally, her eyes on his, she whispered, "Buzzard?"

Elgin looked down, and when he looked back up he could tell that she knew. He took her hands in his and told her, "The little comet has been destroyed. No one could have survived."

She lowered her head and cried softly for their friend. When she looked up again she asked, "Stanton?"

He nodded, then shook his head. "He's taking it pretty hard."

Her face showed how deeply her enhanced sympathy was cutting her. His face showed how much her pain was hurting him. She asked, "The Scout?"

"It's not doing anything."

She took only a moment before she said, "Calling home." Another moment, then, "How far out?"

"About twelve light hours," said Elgin.

"Tomorrow then," she said, and closed her eyes.

The next day everyone was fully awake and completely caught up. Fran isolated the salient points. "It reacted the same way every time?" she asked when she heard about the radar. And about the lasers, "Are you sure there were only fifteen? You couldn't have missed any?"

"No," said Stanton. "All the lasers and all the radars were on this side of the little comet. Or at least visible from here."

"Buzzard must have planned it that way," mused Fran. "Then later, you said you thought it looked like it might be a little insane."

"Yes," said Stanton. "Kind of obsessive." He thought about it. "It was as if it was doing it because it had to, rather than as a rational strategy." He added, "And Buzzard definitely planned it. There's no doubt in my mind about that."

"Yes," agreed Fran. "I think we should be looking at this with the assumption that Buzzard planned everything." She smiled. "We should be looking for details in the details."

Stanton laughed, then his face collapsed in grief. Fran went directly to him and wrapped him in a hug, holding him tightly while he sobbed. After only a moment he broke away, collecting himself and giving her a nod of thanks. He looked at Elgin, who nodded back at him.

The moment was broken by a quiet beeping from the console. "Radio," said Nigel, who was on watch.

"Radio?" said the Doctor, who normally listened much more than he spoke. "They're trying to talk to us?"

"No," said Nigel. "It's much too attenuated. I think it's coming from the inner system."

"That will be instructions," said Fran. "It's about twenty-four hours since the Scout did anything, right?"

"Right," said Elgin, "and we're about twelve hours out. I guess, after it was finished with the little comet, it must have needed to call in before it could do anything else."

"Don't lose that recording, Nigel," said Fran. "We're going to want to study it."

"Right," he said. "This will more than double our sample of its language already. I will back up the backups."

"Good," said Fran. "Now, here's hoping this message is telling the Scout to pack up and go home."

Everyone chimed in on that. There were a few imaginative, humorous guesses at what was

said, as they tried to loosen the tension. Fran saw, though, that Stanton was only half-heartedly involved. The way he was glowering at the monitor, she got the impression that he'd just as soon the Scout stayed. She knew he had unfinished business there.

After ten minutes the incoming message stopped. It wouldn't be as much information to study as they might have thought, since the data rate was relatively low, but it was enough for the Scout. Almost as soon as it ended, alarms started up along with flashing lights. "Radar," said Nigel. "Forty gigahertz. And strong."

The Doctor said, "The alarms indicate dangerous levels of ionizing radiation. Thank goodness we have the shielding."

"And the inverse square law," said Elgin.

Nigel turned off the audible alarms, but left the lights flashing. For synesthetes the lights were still pretty noisy, but they were going to have to put up with it because they needed the information. The lights were arrayed in a way that showed them which part of the comet was being struck by the radar beam, so they could observe the Scout's search pattern. When it passed their location, the Doctor shook his head and tut-tutted, no doubt imagining what the radiation was doing to their insides.

They were able to tell that the Scout didn't move during the probe, by the fact that the radar source didn't move. In addition, they had a kind of radar image of it. The part of the beam that reflected off the comet was naturally scattered, but some of it went back to the Scout. Part of that hit its receivers, but the rest was again scattered, some of it in the direction of Green Comet. The part of that which struck their receivers was a very tiny portion of the original beam, at times only single photons, but over time it built up a crude picture.

Even the most bizarre situations, if nothing changes for a long time, become repetitive. Oddly, even in dire circumstances, the mind can begin to wander. Seeing this, Fran said, "I'm going to get some iceberry juice. Does anyone want any?" They all did, so she went into the other room to get it.

She was barely gone when they heard her shriek. Elgin tore in there and found her curled up, her mouth open in a silent scream of pain.

Chapter Forty – Losing Fran

Fran was still moving when Elgin got to her. She was drifting with the momentum she had when it happened, whatever made her cry out. Elgin's engineer brain automatically calculated that position while he hurried to catch her before she ran into the far wall. When he grabbed her she flinched so badly that he let her go again. He was using the gentle area of a wing to stop her when he shouted, "Doctor!"

But the Doctor was already there, and he had his bag. He took one look at her face, her panicked eyes pleading, and he asked, "Pain?" She nodded rigidly and he quickly applied a syringe of strong analgesic. Within seconds she relaxed with a sob of gratitude, but her remaining tension and her facial expression told him it was still bad. He gave her another dose and added a tranquilizer for good measure. "Better?" he asked her.

She was panting to catch up after holding her breath. She managed to say, "Yes. There's still pain, but I can stand it." She looked at Elgin with a smile. "Nice catch," she said. "All those years of flashball paid off."

Elgin laughed, relieved, but he was by no means reassured. He looked at the Doctor. "What's going on?"

The Doctor shook his head, his bald patch catching the lights. "I don't know yet." To Fran he said, "Where does it hurt?"

"Everywhere," she said. "It hurts everywhere."

"Panalgia," said the Doctor. "Hmm." He examined her fur and what he could see of her skin, finding several reddish areas, but nothing significant. He looked around the room and saw nothing out of order. "What happened? Can you remember?"

"I was going for the juice and next thing I knew I was like this." She looked at the spot where it happened. "All I can think of is it felt as if I'd been struck by lightning."

"Lightning?" Elgin looked around, baffled. He saw Stanton doing the same thing, and they shrugged at each other.

The Doctor asked, "Is there anything in here that could do that? If it malfunctioned, say."

Elgin and Stanton shook their heads. From the ops room, Nigel said, "There are no failures on the board. Everything is nominal." But he added, "The Scout's radar was in the general area. I'll check and see exactly where it was at the time."

"The radar?" said the Doctor. Looking at Elgin and Stanton he asked, "Is that possible?"

They shook their heads. Stanton said, "Even if the full beam got through the shielding, she wouldn't even have felt it." He glanced at Elgin for confirmation, but he was no longer listening. He was obviously occupied with his thoughts, and Stanton left him to it.

"Yes," called Nigel. "At that time, by my estimate, the beam could have been right here. But the instruments didn't record anything unusual."

Elgin cursed loudly, but when the Doctor asked him what it was he ignored the question and went rummaging in the supplies cupboard. He came out with a handful of sensors which he began to set up near where Fran was injured. "Nigel," he called, "have you figured out the Scout's search pattern yet?"

"Sort of," said Nigel. "If it sticks to a pattern, then I think it's done sweeping back and forth and it's now going up and down."

"Can you tell when it will be here again?"

"About a half hour, from the looks of it."

"Okay, thanks." Elgin moved away from the danger area, rejoining Fran and the Doctor.

"How are you doing?" he asked her.

"Fine," she lied.

The Doctor was placing a small disk on her head. When he was satisfied with its position he switched it on.

"Oh!" she said.

"You can feel that?"

"Yes. It feels wonderful." She was more relaxed than she had been since the accident.

"It's deep magnetic stimulation," said the Doctor, making small adjustments. "I'm going to fine tune it. Let me know when it gets worse or better."

She complied, saying yes and no with the changes in her comfort, until he narrowed it down to the best spot. He then adjusted the size of the area being affected by the focused magnetic field, until he had the optimum coverage. When he had it just right he pulled out another disk. "Three more," he said. By the time he had the four of them set up, she was nearly in complete comfort, yet there was minimal numbness and no impairment of cognition.

"I almost feel better than I did before the accident," she joked.

"Yes," said the Doctor. "It's an excellent technology. There's none of the crudity of chemicals, which affect all parts of the body, whether they're involved or not."

"It's encouraging my brain to do what it does anyway, right?"

"That's right." The Doctor's cautious nature came out. "That doesn't mean it's perfect, though. The brain can become inured to the stimulus and begin reacting more weakly. We might have to move things around if that happens, to allow it to rest. You might experience more discomfort at those times."

She smiled at him. "That's a fair trade, Doctor."

He smiled back at her, moved by her concern for his feelings, even at a time like this. His professional doctor's face hid that and prevented the pricking of tears he knew was close. He reached to adjust the disks. "I'm going to put you to sleep now. You need some rest."

When she was out, Elgin questioned the Doctor in earnest. "Have you figured out what it is yet?"

The Doctor was looking at Fran, deep in thought. Finally he sighed and faced Elgin. He spoke in a low voice. "It is a lot like a lightning strike, only without the burns showing where it entered and exited the body."

Elgin jumped on the hope. "So maybe it's not so bad?"

The Doctor shook his head somberly. "I'm afraid it's worse than it looks. The amount of pain she has indicates that she has extensive internal injuries."

"How extensive?" Elgin demanded. "How bad?"

"I can't say with certainty." Now the Doctor was frowning, almost scowling. "I don't have access to my instruments. All I can do is make an educated guess."

"Just give me what you can."

"Okay. I'm sure she's been burned inside. Where and how badly, I can only guess." He saw Elgin's jaw tightening. "There must be vital organs involved. In addition to a slight odor of singed hair, I can detect burned flesh on her breath." Elgin closed his eyes. "Only time will tell how bad it really is. We have to wait and see if she improves or gets worse."

"Wait? All we can do is wait?" Elgin looked around, exasperated. "Isn't there any kind of treatment?"

"Rest," said the Doctor. "Possibly an induced coma or light hibernation. But if it's too severe, full hibernation is the only thing that will do it."

Elgin's shoulders sagged. He looked at Fran sleeping peacefully on the bed. She looked defenseless and he felt helpless to protect her. He picked up a handful of sensors and flew to some selected locations in the rooms, where his calculations showed there might be some radar hot spots. Nothing in the original plans, or the models they had run, or in Elgin's latest calculations showed the slightest hint of anything near Fran's injury site.

He headed back toward the ops room, dropping down out of one of the highest peaks in the other room and drifting to a stop behind Nigel. "Any change?" he asked.

"No," said Nigel. "The Scout hasn't moved and it hasn't deviated from its search pattern." He gestured at the indicator lights. "It's closing in on us now."

Elgin leaned forward. "How long?"

"It looks like just a few minutes now," said Nigel. "Ten at the most."

Elgin thanked him and flew back into the other room, giving the danger zone a wide berth, and went to rejoin the Doctor at Fran's bedside. They stood together in silence, both saddened and frustrated for their own reasons, both feeling the heavy onus of her well-being.

From the ops room, Nigel turned and called, "It should be right on top of us."

There was a bright flash and a loud plural pop. Elgin spun around and glimpsed the sensors cartwheeling away. Fortunately none of them hit anyone, although they didn't look as if they would have done much damage if they had. He scanned quickly to see that everyone was okay, and other than Nigel, who was blinking furiously and shaking his head, they all seemed fine. "Are you okay, Nigel?" he asked as he set off after the sensors.

"Yes, I'm fine," said Nigel, squinting. "I've just got these spots in front of my eyes." He opened his eyes wide, obviously trying to see. "Have you ever accidentally looked at a welding arc?"

"Yes," Elgin chuckled. "Do you need someone to take over for a while?" He noticed Stanton lift his head, alert in case.

"No, no," Nigel said. "I can see well enough if I look around the spots."

Elgin plucked a sensor out of the air. It was hot in his hand, but not hot enough to burn. He spotted another one spinning up into the convoluted ceiling, running it down and grabbing it as it rattled amongst the jutting points. He couldn't see the third one and didn't want to waste any time looking for it, so he went back down to examine the two he had.

Stanton and the Doctor converged on him as he went into the ops room, where they all gathered near Nigel. Looking at the first one showed that its power supply had exploded. He might be able to extract some data from it, but not now. The burns on its casing told him all he needed to know. He handed it to the Doctor and looked at the other one, which was the same. He gave that one to Stanton.

The Doctor said, "Hm," and tut-tutted several times, before handing the sensor back, his face grave. Stanton did much the same, without the tut-tutting, and Elgin could see it in his face too. He took the sensors, his jaw bulging as he ground his teeth, and stared at their ruptures and burns. This is what had happened inside Fran. What he had allowed to happen. There was no magic here. This was harmonics and positive interference between radar beams that were refracted in known ways. If he ran the calculation back, he would see how it happened. It would be obvious, and it should have been obvious when they were designing the shield. He squeezed the sensors in his fist, his teeth bared in a snarl, then spun and threw them across the room. As they bounced and clattered around, he went to a console and got to work.

Within fifteen minutes he had a good first approximation. When Stanton brought him the data from the sensors, including what could be salvaged from the three damaged ones, he was able to refine it enough to install some Faraday shielding. The next pass of the Scout's radar, now at a diagonal, resulted in no fireworks, which gave Elgin some gratification. It also drove home the knowledge that it would have been a trivial matter to prevent it in the first place. It confirmed the fact that Fran was hurt

because of his negligence.

The next pass was also okay, and it was beginning to get repetitious. Elgin spoke for all of them when he said, "Just how much information does it need?"

Nigel, who was still at the main console, said, "If it is following a pattern, and if it continues it to completion, I estimate that it will make a total of at least a dozen passes.

Elgin made a disgusted sound and flew over to Fran's bed, where the Doctor was preparing to wake her. "Do you think she'll be any better?" he asked.

The Doctor, relying on the few functions his instruments could measure, and his feeling that her fur had slightly less luster than before, was noncommittal. "We'll see," he said.

Fran's breathing changed and her eyes slowly opened. She saw Elgin and smiled, but then a vertical crease appeared between her eyebrows. Her body squirmed with discomfort and her eyes left Elgin and locked on the Doctor.

"Is the pain back?" he asked.

"Yes," she said, "but it's different now."

"How?" he asked, adjusting the disks.

"It's less intense. More generalized. Less searing. More deep."

"Mm-hm," he said. "Is this helping?"

"Yes," she said. "It's not as good as before, but it's bearable."

"All right," he said. "I think we can handle this."

Fran looked at Elgin, saddened by his worry and guilt. "Can you do something for me?" she asked.

"Of course," he said, alert and ready.

"It's about the Scout. Can you estimate how much energy it can carry?" He nodded sharply. "Then calculate how much it's used so far."

"Will do," said Elgin, heading for a console, eager to begin.

The Doctor smiled at Fran as he adjusted her disks. She smiled back, but they said nothing about it. "How's that?" he asked, with a final tweak.

"It's good, Doctor," she said, sitting up. "It's not as good as before, but I'm not complaining."

"What do you think you're doing?" he asked.

"I'm getting up," she said, gently removing his restraining hand. "I'm going to the bathroom while I still can." She saw his reaction. "I don't need my talent to see that you think it's getting worse." She shook her head to stop his protest. "I won't be able to do this later, so I want to do it now. I want to go pee. I want to brush my hair." She put her hand up and felt the disks, which made her laugh. "And I want to see what I look like with these on my head."

His hand changed from restraining to assisting. He helped her up and accompanied her to the bathroom. When the door was closed he turned and waited. All three of his crewmates were looking at him, but he could only shake his head, and they looked away.

The Scout did do twelve passes. Its radar beam painted parallel tracks back and forth across the disk of Green Comet, vertically, horizontally and diagonally, twelve in all before it stopped. It seemed to be quieter in the observation post and it took Elgin a moment to realize that the radar warning lights were no longer flashing. Stanton, at the main console, noticed it too, and leaned forward. Elgin asked him, "What's it doing?"

"Nothing," said Stanton. "It's just sitting there."

Elgin left Fran's side and glided over. He knew that Stanton wouldn't have missed anything, but he still had to look for himself. The Doctor checked Fran's signs and then followed Elgin. Even Nigel,

who was sleeping, sat up and rubbed his face, aroused by the change. "What's happening?" he asked as he peeled himself out of bed.

Stanton said, "The radar's stopped."

Nigel, glancing at Fran on the way by, asked hopefully, "Is it leaving?"

"No," said Stanton and Elgin together. Stanton finished, "There's no other change. The radar just stopped."

The Doctor spoke the question the others wouldn't. "What's it going to do now?" They couldn't know, but they needed to know. They needed to get Fran to the Center, to get her into hibernation before she deteriorated too much more. No one answered him.

Then behind them Fran cleared her throat and they all spun around. Her voice was husky but clear. "It's calling in for instructions."

The Doctor immediately rushed over. "How are you feeling?" he said, checking her disks. Elgin was right behind him. Nigel looked as if he wanted to go too, but he stayed with Stanton, watching the Scout.

"I'm fine, Doctor," Fran said, waving his hands away from her head. "The Scout can't make decisions on its own, so it has to get new instructions when it completes a task."

Stanton said, "It was making decisions when it blew Buzzard's comet to smithereens."

"Yes, it was," said Fran, "but within the parameters of its assignment. I think the Scouts are about as intelligent as individual ants." She smiled a fierce little smile. "Besides, Buzzard was in charge at that point." There were chuckles and assenting mutters. She looked up at Elgin and asked, "Has your analysis refined itself yet?"

Elgin nodded. "It's as good as it's going to get. I've factored in everything we know about the Visitor, made all the assumptions about how far the Scout would have had to travel and whether it would have started with a full charge. Calculating the energy it's expended since it got here was easy in comparison." He reined in the chatter and got to the point. "Within a range of plus or minus seven percent, I estimate it has used approximately all of its energy."

Everyone was enthusiastic. The Doctor especially, since it might mean he could move his patient soon. Fran was more practical. She said, "Is that seven percent enough to get here and destroy us?"

"I'm afraid so," said Elgin.

Everyone sagged. Fran said, "Then we wait." She looked her thanks to Elgin, then closed her eyes. "I'm going to get some sleep. Wake me if anything happens."

The Doctor asked, "Would you like some help sleeping?"

Fran cracked an eye at him, thinking, then said, "Yes, please."

He adjusted her disks and they watched her relax and slip under with a sigh. The Doctor felt Elgin's eyes on him and took longer than he had to making adjustments. There was nothing he could tell him. Nothing good, anyway. Finally he could delay no longer, so he turned to face him. "There's not much I can tell you, Elgin," he said. "She's not getting any better. In fact, it's worse every time. At this rate . . ." He trailed off, lost in his thoughts, and Elgin turned to go back to the operations room.

Wait! More waiting! Elgin's frown was deepening as he grew more frustrated. It seemed they did nothing but wait, and now they had to wait some more. His Fran was getting sicker by the minute and all he could do about it was sit and watch. He slapped his console to life and went back into his calculations, in the slim hope that he'd see something new, but the sight of it just made him feel sick. He still got the sense of rightness from it, so he knew there was no mistake, but looking at the numbers gave him the sensation of fullness. It was as if his stomach was full to bursting and another bite would make him vomit. Maybe Buzzard could find something, but Buzzard was gone.

So they waited. The Scout did nothing. There were no flashing lights on the board. Nothing

changed for so long that Stanton let loose with a huge, jaw-cracking yawn, which caught on and made the rounds.

Wiping the tears out of his eyes and suppressing his yawn reflex, the Doctor suggested that they should get some sleep. "There's nothing happening right now," he said, "and we might need to be sharp later."

Stanton agreed. "Come on, Elgin," he said, "you and I have been up the longest."

Elgin resisted. He felt he needed to be awake in case anything happened. He needed to watch over Fran. But together they convinced him that it was for the best. The Doctor said, "Fran's asleep now anyway." He patted Elgin on the shoulder, guiding him toward the sleeping area. "If anything happens we'll wake you up right away. And if I'm going to wake Fran, I'll wake you first so you can be there."

Elgin acquiesced and allowed Stanton to lead the way. In only a few minutes Stanton drifted off, his breathing settling into a soft, comfortable snore. Elgin wasn't so lucky. He ended up lying there for several hours, feeling increasingly fatigued but never sleepy. His mind churned the same things over and over, but it couldn't find any satisfaction.

Elgin awoke to Stanton gently shaking him. "Shift change," Stanton said. He waited a moment, watching Elgin's eyes, which were bleary and unfocused. When the bloodshot orbs finally pointed at him he said, "Time for Nigel and the Doctor to get some sleep."

"Coming," said Elgin, his voice ragged. The last thing he remembered was lying there unable to sleep, sure he wouldn't. Now it seemed he did drop off, although it felt as if it couldn't have been for more than a few minutes. "Fran?"

"Still asleep."

"Okay." Elgin dragged himself to the bathroom before joining the other three at the table. He looked at Nigel, concerned that no one was watching the Scout.

"Don't worry," said Nigel. "I've got it alarmed to the hilt. If anything happens it will be detected sooner than I could see it anyway."

Elgin didn't know what he thought of that. It was logical, but it still seemed irresponsible. But Stanton didn't look worried so he accepted it. Turning to the Doctor he said, "Fran?"

"She's still sleeping," said the Doctor, taking a sip of his juice.

"Yes," said Elgin, noticing the juice and coffee in front of him, "but how is she?"

"It's harder to tell when she's asleep," the Doctor replied. When he saw Elgin's impatient frown he added, "I'm afraid she's still getting worse."

Elgin expected that, but it didn't make it any better. He looked away from the Doctor without speaking. Looking at his console, he felt the germ of a dangerous idea squirming at the bottom of his mind.

The Doctor planted his hands on the table and pushed off. "Well," he said, "we'd better get some sleep, Nigel. It's not getting any earlier." To Elgin he said, "We'll wake Fran after I get up again." He chuckled softly. "I'm under orders, you might say." Elgin partly turned his head and nodded absently. The Doctor hesitated, then shrugged and went to bed.

The next eight hours were probably the most silent stretch of time in the last twenty-odd years. Neither Stanton nor Elgin was naturally loquacious in the first place, and now they both had a perfect excuse for silent brooding. Stanton had lost Buzzard, his protege. Really, like a son. And now it looked as if Elgin was losing Frances, his beloved and the best woman in the universe. So they sat, guarding their posts and fulminating, continually beset by treacherous thoughts of how it might have been different. In this fertile ground, the worm grew in Elgin's mind.

When Nigel and the Doctor got up they were nervous and unsure. They kept looking at each

other, and Nigel made a thorough check of everything, before they realized that the pall was radiating from Stanton and Elgin. Their greetings were met with wordless replies, a sigh or, at most, a grunt. The only thing that roused them was when the Doctor announced that he was going to wake Fran. Elgin rotated his chair and fixed him with a stare.

Fran looked small and weak. The word that came to Elgin was “crumpled.” As he approached he could see that there was no vibrancy in her body. None of that energy that used to radiate from her. If Elgin was hoping that would improve when she woke up, he would be disappointed. When she opened her eyes and looked at him beside her, they were dull. They were still golden, but with a patina over their shine. Even the tapetums had lost their glow, and the light reflected by them now was more copper than gold. The brightest thing in her expression had become the pain.

Elgin watched the Doctor administer another dose of analgesic and tranquilizer, and saw some of the pain leave her face. He crouched close and asked, “How are you feeling?”

She gave a weak, wry laugh. “Oh,” she said, “you know, I’ll get by.” Her gaze sharpened. “Any change?”

“No,” he said, biting off and swallowing his anger. “The Scout is still sitting there doing nothing.”

“Okay,” she said, gingerly adjusting her position. He could see her looking for comfort, and the resignation when she realized she wouldn’t find it. The Doctor came around and began experimenting with the settings on the disks. “Thank you, Doctor, but I can’t feel any changes.” She asked, “Is there about eight hours left?”

“Yes,” said Elgin. “If it is waiting for a reply. And if anything is going to happen when it gets it. And so on.”

She put a hand on his arm. “Don’t be so pessimistic,” she said. “Keep your hopes up.”

Elgin couldn’t speak around the hard, painful lump in his throat. He just nodded, chastened by the fact that she was comforting him, when he should be making it easier for her. Looking in her eyes he saw that, even now in this extreme condition, she knew what he was feeling. That provoked a welter of emotions, the strongest of which was a cold, sharp anger that such a woman should suffer like this.

The Doctor leaned in, so Elgin backed away and returned to his console, where he appeared to busy himself. The Doctor started removing Fran’s disks, checking her reaction as he did. “You can’t feel any difference?” he asked.

“Nothing to speak of, Doctor.”

“We must have exhausted those neurons,” mused the Doctor. “I’ve never seen it before, but I’ve never seen injuries like this either.” He fussed with the disks, resetting the dials, checking their charge, absently polishing them. “I think we’ll leave them off for a few hours, to see if your brain can rejuvenate itself. How’s the pain? Do you need another shot?”

She shook her head. “I’m fine for now,” she said. “Besides, I don’t want to be too drugged. I want to be all present and accounted for when the time comes, you know?”

He nodded grimly. “The best thing would be to have you in an induced coma, or even light hibernation, but I understand why you don’t want to do that.”

She reached out and squeezed his hand. “Thank you, Doctor. As for the pain, it’s not as sharp as before anyway. It’s still strong, but it’s more like a deep ache.”

Elgin did what he could. He went back over all the numbers, looking for an angle he hadn’t already seen. All he found were subtle variations on the answers he got before. Yes, the Scout had used up its energy, plus or minus. Yes, it was waiting for instructions, most likely. Yes, it would be another eight hours, probably. He slapped the display off, disgusted.

“Can’t you tell, though?” It was Nigel.

"What?" said Elgin, interrupting his train of thought.

"I thought you could tell. Like, what to do, or what was going to happen," said Nigel. "I thought that was your talent."

"No," said Elgin, "that was never it." He sighed heavily, and added, "Right now I wish it was." How nice it would be to know exactly what to do, exactly what was going to happen. "No," he said, "I can tell when things are right. Like these calculations." He pointed at his console. "Or when people talk. But I can't necessarily see what's been left out of what they say, or what all the implications are. Only whether what they say is right." He shrugged, unsure if he was making himself clear.

"I think I see," said Nigel. "I guess I was just indulging in wishful thinking." He smiled. "It would be nice to have our very own soothsayer, eh?"

But Elgin was turning away, already disengaging from the conversation. Fran was squirming, the pain passing the threshold of what she could bear. As the Doctor applied more drugs, Fran vomited violently, her weak, frail body convulsing helplessly.

That was it for Elgin. He couldn't stand it any more. He could endure anything for Green Comet and for Frances, but he could no longer endure what she was going through. He turned back to his console and angrily took the lock off the particle accelerator, punching in the sequence of commands that would prepare the capacitors for charging. They were shouting at him to stop. He heard the voices of Nigel and the Doctor, but they faded as his head filled with the noise of his rage. The Doctor, when he put his hand on Elgin's arm, was surprised by the violence of the blow that knocked him away.

Stanton's voice was not part of the protest. He was watching silently, making no interference at all, tacitly in favor of destroying the accursed Scout. Like Elgin, he was rationalizing that it could be blown to bits before it knew what hit it. It would have no chance to send a message to the Visitor and therefore there would be no reason to send another scout after them.

Disjointed pieces of such logic appeared in flashes within the roaring that dominated Elgin's mind. They submerged the reasonable protests that tried to assert themselves there as he reached to engage the final routine that would flood the system with power. But then, under the roaring gale, he heard a tiny golden bell.

"No, Elgin," she said weakly, "you know you mustn't."

His hand hovered over the console, his face contorted in conflict, but he knew she was right. He could hear it. He let loose a sobbing cry of frustration and hurled himself away from the console, blundering blindly away toward the farthest corner. He couldn't look at her as he went by.

As the commotion died down, Stanton drifted over to Elgin's console, staring at the key that would rain retribution on the Scout. It would be so easy. As he savored the possibility, he felt the eyes of his crewmates on him, but only one pair made him turn around. Fran was lying on her back on the bed, her eyelids half closed, her gaze boring into him. Her eyes, though clouded with pain, showed the strength of her spirit as she, by the force of will alone, tried to make him do the right thing.

Stanton was shamed. Disgusted at his weakness, he quickly disengaged the system and re-locked it. Turning around he caught her look of gratitude before she turned to see Elgin coming back.

Nothing was so bad that it could keep him from her side for long. Approaching, he noticed the dim remnants of her aura in ragged patches on her dull, matted fur. Quietly he came close and gently cradled her frail body in his arms. With her head resting against his chest, she didn't need to see his face to know he was weeping.

"I know," she whispered, "I know."

Chapter Forty-One – Fran Goes To Sleep

“Message coming in!” Elgin awoke with a jerk, momentarily confused. He'd decided he would stay with Fran for whatever time remained to them. He'd be there where she could see him whenever she opened her eyes. There to hear anything she wanted to say. He had watched her drift in and out of consciousness. Felt her body tremble and shudder. Listened to her breath get shallower and more labored. And he must have fallen asleep.

Nigel and the Doctor were leaving the table and rushing over to Stanton at the main console. Elgin strained in that direction, while trying to not disturb Fran, but she was already awake. “Go on,” she said, giving him a weak push. “Find out what's going on.”

“Are you sure?” he said, anxious to go but bound to stay.

She just nodded and gave him another push. Her grin was just as weak, but to Elgin it had the beauty of an endangered species.

He pulled gently away and flew over to join everyone at the console. They were gathered in a tight knot, peering intently at the displays, which still showed the Scout in its familiar position. He could hear a shrill screech, faint but certain, which stopped abruptly as he arrived.

“Message over,” said Stanton. He checked his instruments. “It lasted about thirty seconds.”

“I wonder what it said,” said the Doctor.

“Hopefully, ‘Come home.’” said Nigel.

As everyone murmured their agreement, Stanton stood up and offered the chair to Nigel. “I think you're the closest we have to an expert on this.”

Nigel slid in and did a quick scan of the instruments. They gave no indication that the Scout was reacting to the message yet, so he decided to do a preliminary analysis of the message itself. Their studies of previous communications amongst the invaders revealed that the Visitor used digital encoding on a binary base, but strictly classical. They had found no deliberate use of quantum effects either in the transmission of the information or in the encoding of it. That hadn't helped them understand it, though. While they could deconstruct the transmissions, isolating and identifying the parts of them right down to the basic elements, they still couldn't parse their meaning. Nigel stared at the unpacked message on his display without enlightenment.

“Anything?” asked Stanton.

Nigel shook his head. “It's completely opaque. I don't even know what I'm looking at.” He pointed at the display. “Are these like letters, or parts of letters, or are they whole words? Do they even use words? Is it even a language, or are these simple machine instructions?”

“What about side by side?” asked Stanton.

“We've already done side by side analyses. It didn't help.”

“But this is a different case,” Stanton pointed out. “These two messages are related. They refer to the same situation, so maybe there will be some elements in them that are comparable.”

Nigel looked at Stanton with a wide eyed grin, then called up the first message. He plunged in and was so engrossed that he didn't react when a quiet alarm announced that the Scout was moving.

Stanton leaned forward to better see the numbers, a set of coordinates giving the Scout's position relative to the remains of the little comet. Normally they went constantly through random fluctuations while maintaining the same position overall, but now the average was also moving.

“Is it moving?” asked the Doctor.

“It looks like it,” said Stanton, “maybe. The numbers are moving anyway, but it's hard to tell for sure yet.”

The Doctor was no longer listening. He went directly to the storage locker and hauled out a pressure suit which he began to prepare for Fran.

"What are you doing?" asked Elgin.

"I'm preparing to transport Frances to the Hibernarium," said the Doctor, laying the suit out beside her. Fran began to rouse herself.

"But we're not even sure it's moving yet."

Stanton interjected. "It's definitely moving now. Can't say where yet, though."

The Doctor continued his preparations, his face tight with determination. Elgin said, "But we don't know which way it's going to go. We don't know."

The Doctor stopped. He said, "If it's going back then that's what we've been waiting for. If it's coming here then we have to destroy it. Either way, it's time." He went back to work.

Elgin thought about that, then he hurried over to the locker and pulled out two more suits.

Getting Fran into the suit was awkward and painful, but she gamely persisted. Elgin and the Doctor were torn between avoiding hurting her and getting it done. At the end, when the suit was snuggling down on her body but before the head was closed and sealed, Fran called Nigel's name.

He surfaced from his study of the Visitor's language and turned to face her. "Yes, Fran?"

Her voice wasn't very strong but her message was. She told him, "Analyze, analyze, analyze."

He nodded somberly and said, "I will. Rest assured, Frances."

She smiled back at him. "I will," she said. She glanced at Elgin. "Close this suit up. I really need that rest."

Their way was marked by daubs of reflective paint shining in their lights. The crack in the comet's body was small on that scale, but it dwarfed them as they flew along it, Elgin and the Doctor flanking Fran as if guarding a precious treasure. Without the markings they would have been hopelessly lost almost immediately among the many branches and blind alleys.

After the first kilometer the Doctor said, "I'm going to go on ahead and prepare the room. Will you be all right?"

"Yes, sure," said Elgin, adjusting his grip.

"Go ahead, Doctor," said Fran. "We'll be fine."

After the Doctor disappeared around a bend, they were alone in the huge, dark space. They didn't speak for a few kilometers, puffing and gliding from one bright patch of paint to another. They were lost in their thoughts, bemused by sudden glitters as their lights struck fractured planes of ice. Elgin wanted to speak. He wanted to tell her every thought in his head, and to hear the music of her voice while he still could, but he was tongue-tied by the fear of seeming inane. Finally she spoke, her voice now a dry whisper. She spoke his name, in a tentative question. "Elgin?"

"Yes, Rannie? I'm listening."

He could hardly hear her, as if she spoke reluctantly. "I'm scared," she said.

He gently pulled her closer, almost losing his own voice. When he spoke, it wasn't to reassure her. Instead he said, "I am too."

The silence returned, but it was no longer uncomfortable. Each of them knew now that more words were not necessary. They knew and understood the depths of their shared burden and they flew on through this strange place, happy to be here together.

By the time they arrived, the Doctor had the lights on and the air up to pressure, but it was still too cold to take off their suits. It wouldn't take too much longer to warm up, the room being small and well insulated, so Elgin parked Fran and began helping the Doctor set up.

"Be careful," said the Doctor, sliding the tray out in Fran's cocoon-to-be. "It's easy to forget

how cold these things are.”

“Right,” said Elgin, “thanks.” His hand was resting on the machine that would put Fran into hibernation and he could already begin to feel the cold stored in its mass. He would be all right as long as he didn't forget and leave it in one place for too long.

“According to the instruments, we should be able to take her suit off in about an hour. A little less than that to open our helmets,” said the Doctor. “Non-insulated surfaces will still be dangerous because they will still be so cold, but we'll be okay if we're careful.”

“The sooner the better,” said Elgin, looking at Fran. Her eyes were closed and he had to stop himself from going over to see if she was still alive. “What about Fran, though. Won't it be too cold for her to lie on this?”

“The tray is insulated, and anything we'll be attaching to her is light enough that it will be warm by then.” The Doctor indicated the row of two dozen tubes and wires and sensors that would be connected to her while she slept. “We just have to make sure that we don't let her touch anything massive, and that we stay clear as well.”

Elgin looked around, making a mental list of the danger spots, and when the time came it went fine. The hardest part was getting the suit off her. She was nearly sobbing with pain and frustration, with relief so near and yet unattainable, but seeing the anguish in Elgin's face made her bite her lip.

In a few minutes she was out of the suit and on the tray, the Doctor methodically attaching all her leads. Whenever he wasn't in the way, Elgin was close, looking in her eyes. “I'll see you when you get up,” he said.

“Yes,” she said, her eyes drooping.

He leaned in and kissed her on the lips. “Pleasant dreams.”

She smiled, then her eyes sharpened once more. “Help him,” she whispered.

“Help who?” asked Elgin.

“Help,” she said, her lids falling shut. “Help Sta . . .” She was gone.

Elgin looked at the Doctor, who was double checking everything before closing the cell and starting the cycle. “Was she saying Stanton? Does she want me to help Stanton?”

“I think so,” said the Doctor.

“But . . .” said Elgin.

“Shh,” said the Doctor, standing back and staring, ensuring that all was ready. Then he pulled Elgin forward and together they slid in the tray and closed and sealed the door.

Chapter Forty-Two – Elgin Goes To Sleep

On the way back Elgin kept looking back, and when they got to the first bend, where he would lose sight of the Hibernarium, he stopped. The Doctor stopped with him and turned to look as well.

“Will she be all right?” asked Elgin.

“She’ll be as all right as she can be,” said the Doctor.

“But, will she . . .” Elgin said. “When she wakes up, will she be better again?”

“I don’t know,” said the Doctor. “There’s no way of knowing yet.”

“But it will be working on her, right? It’ll repair the damage?”

“It’s her best chance,” the Doctor assured him. “One thing’s for sure. She’s better off now than she has been for the last day and a half.”

“Yes,” said Elgin, grimacing. “Yes.”

The Doctor took his arm and pulled him on. “Come on,” he said. “I’ll check in on her tomorrow. Maybe I’ll learn something then.”

Back in the observation post Stanton caught on right away and called Elgin on it. “She asked you to take care of me, didn’t she?”

Elgin tried to look innocent, but the Doctor laughed and blew it for him. So he said, “Yes. It was the last thing she said before she went down.”

Stanton was shaking his head but he was smiling. “You don’t have to do anything special, Elgin.” He came over and hugged his friend. “Just knowing I have friends like you and Frances is all I need.” He broke the hug and spoke more somberly. “We’ve both lost someone,” he said. “But that means we both have someone who knows how we feel.”

Elgin matched his gaze and nodded. “Yes,” he said.

The Doctor went back to the Hibernarium the next day and when he returned it was with good news. The equipment reported that her injuries, though severe, could be repaired. Nothing inside her was utterly destroyed, and when she came out of hibernation in eighty years there should be no lingering effects.

Even Nigel looked up from his work and applauded that, but he put his head right back down again. He was taking Fran’s admonishment to heart and was subjecting everything to do with the Scout’s visit to exhaustive analysis. Every bit of the messages, every pixel of radar, every action of the Scout was laid open and mercilessly probed. It would end up dominating his life for years and would turn out to be fortunate for two crucial reasons.

Because of Nigel’s preoccupation, Elgin and the Doctor got the news from Stanton when they got back from the Hibernarium. The Scout was definitely not coming back. Its trajectory showed that it was heading back to the inner system by a long, low energy course. It would be impossible now for it to change that and come out to their orbit. There had been no further messages and there appeared to be no reason why they couldn’t begin waking people up and start rebuilding. They would just take care that no indication of their activities was allowed to show beyond the surface of the comet. Just because the Scout was leaving didn’t mean that it wasn’t still watching them.

“I guess we could wake up the first four any time,” said Elgin.

“Three,” said Stanton. When they stared at him he explained. “Nigel’s got a job,” he said.

“But we need to wake the people up,” said Elgin. “We need all the help we can get. We’re already down one.” His throat tightened up and stopped him.

"I know," said Stanton. "It's going to slow us down, but it won't make that much difference in the long run."

Elgin glared at Nigel's back, but he saw the sense in what Stanton said. "I suppose," he agreed.

"Right," said Stanton. "And he is under orders from Fran, after all. She must have had some reason for it."

That settled it for Elgin. If Fran saw a need for it then it was the best thing to do. Nigel could get out of waking people up and concentrate on his analysis, as ordered by Fran. That was settled but now there was another feeling. Was it jealousy? Was he feeling jealous over Fran giving Nigel a special assignment? Surely not. It confused him and he pushed it away to deal with later.

"We can work it with three," said the Doctor. "The routine will be the same as with five or four, but it will just take a couple of days longer." Each of them would be minder for one waker at a time. They had considered trying to speed it up by increasing their workload, but they decided it was too important to try to rush it. Each waker would have the concentrated attention of one minder for the critical first two days. After that, if the first waker was adjusting well enough to get through the last two days largely unsupervised, they could begin another one. The wakers themselves should be fit enough to be minders by day five or six, so the numbers would increase rapidly.

"Okay?" said the Doctor, who was naturally in charge of this phase of the plan. When they nodded he said, "Okay, let's put our suits on and go to work."

The first three they brought up were technicians who knew the Hibernarium equipment. It was essential to their goals to have it working in peak condition, so they woke the people who could ensure that. Then they settled into a routine of re-animating the comet. Within two weeks there were enough people to form the first work crew. Stanton and Elgin took charge of that and began reconstructing their living space, which filled up as quickly as they could produce it. After six weeks there were over a hundred wakers, mostly engineers, builders and fabricators, and Green Comet came alive.

Their first major project was to carve out and seal the new Square, a cavity two hundred meters square by one hundred twenty-five high. This would be their communal space, the center of their society, and for now it would be their center of operations.

They got water and sewer going and started up food production. With the basics roughed in they took a few weeks to polish it up and to give the infrastructure time to settle into smooth running. Now things were ready for another batch of wakers, a more general mix of talents, as well as the families of the work crew.

The four of them got together often. It was surprising that they weren't sick of each other's company, but they were the only ones who understood what they'd been through. The only ones who could have a conversation about it that meant anything. So they had lunches and dinners and evenings at the café, as they were calling the fabric partition on one side of the Square.

Nigel was sometimes absent, even when he was there. They didn't bother asking him how the analysis was going any more, because the answers were always so indefinite and full of qualifications. Eventually, though, he told them that he thought he had made a breakthrough on the Visitor's language.

"Oh," said the Doctor, "so it turns out it's a real language?"

"Yes," said Nigel. "It's a strange language, compared to the ones we're used to." His gaze went inward again. "I wonder if it's the language of the ones who first built the machine, or has the Visitor evolved its own language?"

"Anyway, Nigel," said the Doctor with a kindly smile, "your breakthrough?"

"Oh, right," said Nigel sheepishly, blushing as they chuckled at him. "I've been comparing the last two messages, as Stanton suggested, and I've been able to winkle out some simple instructions. I

found the one that ordered the Scout home, complete with vectors that match the Scout's actions, for instance."

"That does sound like a breakthrough," said the Doctor.

"Yes. It opened up a lot after that," Nigel said enthusiastically. "And it led to discovering something in the penultimate message that alarmed me." He frowned at his thoughts, then continued. "If I'm interpreting it correctly, the Visitor told the Scout to release another, smaller craft."

It alarmed all of them. Although there could be many reasons for it, the obvious one seemed to be that the new machine would be sent to explore Green Comet. Stanton asked the salient question. "Is there any other evidence for this little vessel?"

"Possibly," said Nigel. "In the reflected radar data there are some anomalous points." He shrugged his wings. "It's just a couple of pixels and it might be noise, but it appears twice and the positions are consistent with a trajectory to Green Comet."

"Is that all you could tell about it?" asked Stanton.

"It's possible to estimate its size, or at least put limits on it. It can't be any larger than ten meters, at the very most." He gave them the most shocking news then. "The thing is," he said, "if my calculations are correct, it will be here by now."

"What?" said Stanton. "There's an alien spacecraft here, on the comet?"

"If it was meant to land, yes. Or it's in orbit. Or it was just a flyby, though I doubt that."

Stanton was agitated. "What are you doing about it? Who have you told?"

"I haven't told anyone yet," said Nigel. "I wanted to tell you guys first, in case I was crazy."

"You're not crazy, Nigel," said the Doctor. "So, what's your plan?"

"I'm going to advise the planning committee." He laughed. "That is, the rest of the committee." He, Stanton and Elgin already formed half of it. "I'm going to requisition a suit and go out and search for it."

"You and who else?" demanded the Doctor. "Because you're not doing it alone." He gave Nigel his best admonishing stare. His concern went well beyond his doctor's duty, into deep friendship.

"I hadn't thought that far," said Nigel. "I'll let the committee settle the details. All I know for sure is that I'm going out there to find the . . ." he searched for the word, "the Visitor's spy."

That's what they called it then. It was the Spy. And Nigel would spend the next fourteen years looking for it. But on this night, in addition to the news about the Spy, there was something he wanted to say to Elgin. It was nothing specific, but he got a feeling, the more he studied all the data from the Scout incident, that there was something there. When he looked at the way the Scout destroyed the little comet, and the way Buzzard fought back, he just knew that something was happening there that he couldn't see. He wanted to tell Elgin, to get him interested so he'd take a look, but Elgin wasn't interested in much these days, and Nigel was easily distracted, so the moment passed and nothing happened.

Although Elgin wasn't interested in much, it didn't affect his work. That was still ensured by his sense of duty to the comet, and by the knowledge of the effort and sacrifice that had brought it this far. He would never allow his personal pain to endanger that. On the other hand, without Frances to share it with him, life wasn't very interesting and he couldn't maintain the same level of attention to the non-work parts of it.

His dedication to the rebuilding effort was absolute, but after four years everything was making the transition from preparation to normal operation, and he felt his drive beginning to lose momentum. He talked to his friends and they assured him that he had done enough for the comet, and he should feel free to join Fran. With their support, and the Doctor's supervision, Elgin went to the Hibernarium and went down for the big sleep. He and Fran were the same age now, fifty-three years old.

Chapter Forty-Three – They Wake Up Together

When Elgin woke up seventy-six years later, Green Comet was back to normal. It was once again a bustle of activity and color. They were in regular contact with Orange Comet, though still carefully, and the Visitor was fading into an ugly memory.

The best thing about waking up, though, was Frances. In the jumbled early part of the process he could sense her nearness, and when he could finally turn his head he saw her in the bed next to his. She was looking at him, her golden eyes shining with health and love. They stared at each other, unable to move or speak. When their eyes fell shut, their faces continued to glow with happiness long after.

Stanton and the Doctor were their minders, which was odd because they were both still up when Elgin went down. When Elgin emitted a gargly mumble to that effect, they gave him the obvious answers.

“In my case,” said the Doctor, “I wanted to be here to check on my patient when she woke up.” He smiled a proud doctor smile at her. “And she's doing fine. Just fine.”

“And I wanted to personally take care of my best engineer,” said Stanton, smiling equally proudly.

Fran mumbled something like, “Nigel?”

“He's up too,” said the Doctor, “but he's waiting until you're ready.”

When it was time to leave the room, the five of them were there. Stanton stopped them before they went out. “Hold on a second,” he said. “You need to be prepared for this.”

Fran and Elgin looked at the grins on the three of them. “For what?” asked Fran.

“Well,” said Stanton. “there might be a few people out there, waiting for you to come out.”

“Waiting for us?” She shared a look with Elgin, who was equally mystified. “Why?”

Stanton was actually blushing. “It seems we're kind of celebrities,” he said. “Especially you,” he added, looking at Fran.

“Me?”

“Yes,” said Stanton. “People remembered it was your idea, and you fought to convince them. Then you almost died.” He shrugged at her frown. “It's taken on a life of its own.”

“Oh, for goodness sake,” she said, taking Elgin's hand. “Come on. I'd like to see the café.” She led the way out.

There were more than a few people out there. There were over a thousand. Everyone who could get away from their duties wanted to be on hand when the Five were re-united for the first time. There were shouts when they were spotted, which turned into cheering and fervent applause. At its focus, Fran felt its full force and instinctively drew back under Elgin's arm. His wing cupped her back in what would become the classic pose.

Elgin was frowning but it was nowhere near the infamous face. It was simply a look of concentration as he tried to see what was going on. He was startled and his protective instinct was engaged when Fran came under his wing, but the situation was so obviously joyous that he relaxed right away. He felt her body relax too, and when she looked up at him he could see that she was unconcerned.

The crowd meant them only love and respect, but even that can be a problem when there's too much of it. They were rapidly pressing closer. There was jostling to be in front and there was pressure from behind, and the upshot was a danger of crushing the objects of their affection. Stanton and the Doctor, still in the protective mode of minders, pushed back. Fran could feel Elgin stirring, ready to

defend her, and she didn't want to see what would happen then.

She gently disengaged from Elgin and rose up to where everyone could see her, then she began to speak. There was so much noise and commotion and she was speaking so quietly that no one could hear her, but she kept talking. Within seconds the crowd quieted, with a few angry shouts at those who weren't paying attention, and stood still to hear her.

"Thank you for being here," she was saying. "Your support has always been important to us." She got the other four to rise up too. "Whatever we did, we were only able to do because of you." She bowed her head at the protests. "If you could do one more thing for us," she got cries of affirmation, "we'd really like to go to the café for a nice cup of coffee." She smiled an inclusive smile. "We just got up," she said, knowing that they all knew what that felt like.

The laughter of recognition rippled through them and, somewhat abashed, they fell back and opened a path. Some of them followed their heroes, but others fell away, denying themselves to give the Five space and freedom. By the time they got to the café, their entourage was down to a few dozen, and all but a few were thoughtful enough to stay outside.

Once around their table, cups of coffee wafting their aroma about, Fran said, "Is it always like this? How do you get any work done?"

"No," said the Doctor. "We all got some notice when we got up, but nothing like this." He glanced at their hangers-on, the ones who followed them in, and saw that they were staring at Frances and Elgin. Mostly at Fran. "I think it's partly because the five of us are all together for once, but mostly it's because of you."

"Us?" Fran was incredulous and Elgin was beginning to frown again.

"Yes," said the Doctor. "You two are a legendary couple. Everyone knows your story, so they love you as a pair." With an apologetic glance at Elgin, he added, "But it's mostly you, Fran."

"Me?" The beginnings of outrage formed on her face. The unfairness of singling her out and diminishing the others was more than she could tolerate. But the frown had left Elgin's face. Admiration for Fran made sense to him. When she looked to him to affirm her opinion, she saw him nodding. "Don't you dare!" she said.

Elgin stopped nodding, but he said, "They do have a point, you know." When her eyes widened he hastily added, "You were the driving force behind it all." Her eyes narrowed. "Really!" he insisted, looking to the others for support. "You always knew the right thing to do. You never let us waver." Her lips compressed. "And you almost died!" he finished desperately.

She rolled her eyes. "And I guess I'll never live it down," she muttered. She turned to Nigel, who was sitting quietly, as if a guest there. "Speaking of heroes," she said, "tell me about this Spy of yours."

Nigel explained how he followed her suggestion and analyzed the data. How that led to discovering the Spy and how he and an ever-changing crew flew over the surface in pressure suits looking for it.

"You didn't have the same people the whole time?" she asked.

"No," he said. "They'd join me for a while then, when nothing happened for a couple of years, they'd move on."

"But you stuck with it."

"I didn't have any choice. It was my responsibility." He told how he found the Spy after twelve years, but learned that it had six empty bays that must have housed even smaller machines.

"We threw some Faraday netting over the Spy, so it couldn't send a message to the Scout, then we began searching for the 'crabs,' as we ended up calling them." It turned out that the crabs hadn't stayed on the surface, but were burrowing into the body of the comet. "Within a couple of years they started popping up and coming back to the Spy. We're not sure, but we think they might have come

across some of our technology down there.”

“You were just in time,” said Fran. “Two more years and they would have brought that information back to the Spy and our secret would have been out.”

“We got lucky,” said Nigel, nodding.

“Right,” she said. “Fourteen years of 'luck.'”

He blushed, pleased. “So, we captured the crabs and they're all accounted for. We don't think there were any more spies, and we're pretty sure there wasn't a message sent.”

“Can it be, after all this time, that we can finally stop thinking of the Visitor every second?”

The look of relief and satisfaction on Fran's face made all of their effort and deprivation worthwhile. The Five savored this moment of success and completion. They raised their cups and made a silent toast to victory.

Everyone in the café felt it. They knew that they had witnessed an historic moment. They were there when Green Comet went from looking back to looking forward.

Elgin and Fran moved back into their apartment in the yellow side of the Square, just above the ground floor shops, up against the orange side. It was just like the original, built to the exact specifications during reconstruction and held for their return. They were already a legend for their love story before the Scout incident, and now they were beyond legendary. They were two of the Five, who faced the Visitor and won. They were the heroes of Green Comet, and literally a living myth. In their absence the apartment was a sort of shrine, and now that they were back it was even better. It was the first place anyone looked when they entered the Square, such was the power of the most important two of the Five. Especially Fran.

Fran was frowning. She was practically fuming. “Most important,” she muttered. “No one was 'most important.'”

Elgin disagreed, even if he wasn't going to say so. He certainly knew that he wasn't most important, but he couldn't say the same about Fran. He knew, more than anyone, how much she had given to the comet, and what it cost her. He knew that everything came from what she did and that the rest of them were really interchangeable and replaceable. But he wasn't going to argue with her. And anyway, she had a point.

“Look what Nigel did,” she said. “Fourteen years in a pressure suit. And it saved us all.”

“Right,” said Elgin.

“And there was another Five on the little comet,” she added. “Where would we be without them?”

“Probably dead and gone,” said Elgin.

“That's right,” she said.

Elgin didn't know how it could happen, but he fell even further in love with her at that moment. He looked at her standing there, her fists on her hips and a scowl on her face, and he thought she was the most beautiful thing he'd ever seen. “There's no explaining it,” he said. “Nigel did so much, and Buzzard too.”

She sighed, letting her shoulders drop and her fists open. “I guess there's nothing we can do about it. Once people get an idea in their heads, there's no room for facts.”

“Yes,” said Elgin, eyes mischievous. “You'll just have to get used to being most important.”

She turned on him, shocked, but when she saw his face she had to laugh. She said, “Doesn't it bother you, all this hero stuff?”

“Sure,” he said, “but it's not so bad because I'm not as important as you.”

“Stop that!” she said, laughing. More seriously, she went on. “Speaking of Nigel and Buzzard, Nigel says he asked you to look at his data from the Scout and the destruction of the little comet.”

“Yes,” said Elgin, looking away. He'd never got around to it.

“He asked me to have a word,” she said. “Do you think you could have a look at it?”

Elgin felt a stab of cold, realizing he'd been shirking. “Of course,” he said, “first thing tomorrow.”

Elgin did go over Nigel's work, and it looked right. Each piece of permapaper he picked up looked straight and true at first glance, and remained so when he read it. Nigel's math was only intermediate, but it was solid. It was good enough to show that the Scout's apparent insanity when it destroyed the little comet, and went on destroying it long after it was necessary, must have been deliberately provoked. It was obvious that Buzzard must have studied the Visitor at his trademark exhaustive depth, and calculated how to provoke the Scout into expending the maximum possible energy. Nigel's work showed how Buzzard had saved their lives.

Elgin could see all that, but he couldn't find anything that would tell them more. It couldn't save Buzzard because he was gone. Nothing could have survived that. The Scout was also gone and it wouldn't be coming back, so this data wouldn't be useful there. To Elgin it looked like a good analysis that helped them understand what happened, but he couldn't see any point in belaboring it.

The only reason he stuck with it was because Nigel and Fran thought he should. He respected Nigel's work, especially since he discovered and captured the Spy. That showed insight and dedication. And he'd learned that when Fran had a hunch it was inevitably a good idea to follow it. So he kept coming back to it and going over it, again and again. Eventually he started to get the same feeling as Nigel and Fran. He couldn't define it or explain it, but it began to feel as if there was something there under the numbers. It was as if Buzzard was there trying to tell him something.

It seemed like a promising sign, but it turned into the biggest frustration. Now, not only was he unable to see anything there, he had this powerful feeling that he should. It bothered him. It nagged and taunted and wore away at him, until he was wearing an almost permanent frown and carrying his temper behind an extremely thin barrier. The people around him were careful to not set him off, but he didn't notice that. He began to miss things. Events and situations that weren't directly related to his problem went right by him. He didn't notice people or their feelings, even, to his subsequent horror, Fran's

It finally came to him in a dream. Once again he was outside playing flashball, and again the dark, frightening thing was there. The difference was that this time he didn't have the ball. He had the sense that he'd made his throw and the resolution of the game was out of his hands. And there in the distance, dangerously close to the dark force, the ball shone all the way up to a white, cracking flash. And Elgin had it.

“Fractal!” he shouted as he snapped out of his dream.

Fran woke up. “What?” she said fuzzily.

“It's the fractal! Flashball! Buzzard!” he babbled excitedly. He launched himself at their terminal where he called up everything on the defence of the little comet and the diagram of the Harriers' flashball fractal pattern.

“There, see?” he said as Fran joined him.

She didn't, but she knew he did and that was all she needed. “Does this mean that you've finally figured it out?” she asked.

“Yes,” he said, devouring the data on the screen. “And if I'm right,” he paused, unable to believe what he was about to say, “if I'm right, then Buzzard might be alive.”

Her mouth dropped open, then her eyes flashed and she grinned. She had no doubt he was right. She could tell. She'd seen it often enough. “Work it out,” she said. “I'll call Stanton.”

“Wait,” he said. “Don't you think it's premature?”

"No," she said. "He deserves to know. Anyway, I won't mention the part about him being alive yet."

"Possibly being alive."

"Right. I'll just tell Stanton that you've figured something out about Buzzard's plan, and that he should come over." She gave him a shove. "Get to work. Prove it."

"**It felt** like I was looking at Buzzard's calculations," he told Stanton. He'd confirmed his inspiration before his boss arrived and was working on the dangerous assumption that Buzzard was alive. "And they were right. I felt everything line up in my body and there was an actual clunk as it fell into place."

"Okay, okay," said Stanton cautiously. "Slow down and explain it to me. Maybe I'll be able to feel this clunk too."

"Right," said Elgin, getting a grip. He organized his thoughts, then asked, "Do you remember Buzzard's message when we learned he was staying with the little comet?"

"All good, no magic?" said Stanton, remembering the pain.

"That's right," said Elgin. "I should have seen it then. It's what he used to say when he had things figured out."

"What did he have figured out?" asked Stanton patiently.

"It was the fractal," said Elgin. "The one we used in that last flashball game." Elgin realized there were too many details, so he boiled it down. "The defence Buzzard used against the Scout wasn't random or ad hoc. The sixteen lasers and radars were the same as the number of players on flashball teams."

"But there were only fifteen lasers," said Stanton.

"Yes," said Elgin. "There should have been one more at the end. The fifteen lasers matched the pattern of the first fifteen throws in the fractal, but the final throw, Buzzard's throw in the game, was missing."

"So?"

"So, I realized that he'd done the last throw first. The sixteenth laser was Buzzard and his crew leaving before the Scout ever got there, and all the rest of it was automatic."

"So they could still be alive?" Stanton extrapolated hesitantly.

"Yes," said Elgin, bursting with glee. "And because we know how the last throw went, we can calculate Buzzard's trajectory."

They did calculate it, together and independently. They checked each other's work and eventually decided on the most probable trajectory, with a two degree margin for error. Elgin chastised himself for that. If he had done this earlier then a two degree error wouldn't have built up to such a large volume of space. Stanton rejected his self recrimination, reminding him that Buzzard, to protect Green Comet, had deliberately made it obscure. "And," said Stanton, "he also made sure that you could do it. He entrusted their safety to you, personally."

"And I let them down," said Elgin. "My inattention sentenced them to an extra eighty years out there."

"Elgin, they're frozen solid. They're not going to notice."

"But with the error bar, the longer it takes the more likely they are to get lost."

"Then I guess that's why Buzzard made their course almost parallel to ours, to make it easier."

"Yes," said Elgin. "Not only that, did you see this?" He showed Stanton two pieces of permapaper.

"Yes," said Stanton. "That's Buzzard's course and the other one is ours, after we correct it to

follow Orange Comet.” Stanton smiled and shook his head.

“Not only did he match our course, he matched what it would be,” said Elgin. “He thinks so far ahead, I feel like a blind mole groping my way.” He grinned fiercely. “The Scout never had a chance.” Stanton matched his grin. “That bugger,” he said.

Explaining it to Fran later, Elgin was still excited. “It will take a hundred sixty years to bring them back,” he said. “I was all for going myself, but Stanton said we should let someone else be the heroes this time.”

“Stanton's right,” said Fran.

“We're going to get volunteers. Then there's the planning. This is going to be a significant job.”

“We'll do it,” said Fran. “If it can be done, we'll do it.”

“We haven't even officially announced it and there are already over a hundred volunteers,” said Elgin. “Including Tomas. He wants to bring Buzzard back for Maria.”

“Tomas should go,” said Fran. “And so should Maria. She's not the kind of woman who needs things done for her. She needs to do them herself.”

Elgin finally noticed that Fran, while interested, was not as animated as she normally would be. Now that he noticed, he could see that she was duller than normal in other ways. Her fur and her eyes. Even her expression and the way she held her body. How could he have not seen?

She saw his realization and stopped trying to pretend. Sadness settled on her like a fog. She said, “I have to tell you something.”

She began to notice that something was wrong a few weeks earlier. The Doctor couldn't say what it was, only that she seemed to be aging at an accelerated pace. Between them they decided that the best thing would be hibernation. Maybe it would fix the problem, whatever it was. At least it would stop things getting any worse.

Elgin was devastated. Not only was he losing her again, but he hadn't even seen it happening. All he could say was, “I'm sorry.”

“I know you are,” she said, coming over and putting her arms around him. “I tried to hide it from you so you wouldn't be distracted from the Buzzard problem. Now that you've solved it, I don't have to hide it any more.”

They did the only thing they could do. After the volunteers were chosen and the plan was worked out to everyone's satisfaction, Fran personally saw the rescuers off. Then she went down to the Center.

Elgin was alone again.

Chapter Forty-Four – Fran Goes Down For Good

“**You don't** have to do this, you know.” Stanton was standing with Elgin, looking at the waste treatment plant.

“I do,” said Elgin. “It's the twenty percent rule.” He was talking about the rule that obliged people to spend twenty percent of their waking time working at the less popular jobs. It could be a little during each waking or all in one whack, but by the time they were up for a hundred years they must have spent twenty of them doing the work that otherwise might not get done. For the other eighty percent everyone was entitled to do the work they wanted.

“I know,” said Stanton, “but you don't have to. You have earned the right to take a pass.”

“No one has that right.”

“Not as a rule, no. But you've earned the right to special dispensation. Hundreds of volunteers would fight for the honor of doing your twenty percent for you.” Stanton turned to face Elgin for emphasis. “Besides,” he said, “don't you think facing down the Scout qualifies? You've got over twenty years right there.”

“No,” said Elgin. “That doesn't qualify because I wanted to do it.”

Stanton nodded because he agreed. He wasn't going to use those years against his twenty percent either. As a last stab he said, “Couldn't you at least rest on your laurels? People hold you in high esteem. They wouldn't mind if you didn't do this.”

“That's all the more reason to do it,” said Elgin. “If they're looking up to me then I need to set a good example.” He thought of Frances and added, “Especially for the children.”

Stanton clasped his shoulder. “That's what I thought you'd say.” He tried one last argument. “You don't have to do it now, though. You're nowhere near eighty years yet.”

“I know,” said Elgin, “but I don't believe in leaving it until the last minute.” With that he rubbed his hands together and went to work.

Elgin worked in waste reclamation for the remaining seventeen years of his waking. It wasn't all he did. He also played flashball and went to the café. He would drop into the shop to visit with Stanton and his current engineers. He visited the Doctor a few times, but that always turned into yet another confirmation that they had no idea what was wrong with Fran, so he stopped going. He would have gone to the planning room but Nigel wasn't there. He had got off the cycle the rest of them were on, so while the three of them had large overlaps in their wakings, Nigel's was only a couple of years, and they didn't see much of him.

It came down mostly to work and flashball for Elgin, and even flashball was incomplete with the absence of Buzzard. Elgin still played well enough. He was still one of Captain Rita's most reliable players, but it was all technique and efficiency. Rita didn't see any of the flair and exuberance that he used to show. She missed the sheer pleasure he radiated with the love of the game. Now, even though she knew she could put him in any situation, it was nothing more than the execution of his responsibility to him.

After a game she went to sit with him in the locker room. He'd been smiling and joking with the other players, but she could see that it was all on the surface. Looking past that Rita could see that he was dull and flat and gray. This wasn't the Elgin she knew, bright, energized, a magnet for the eyes. Even his aura was gray.

It was obvious to her that half of him was missing. It wasn't as if he was living so much as merely attending, existing in a shadow of his real life. Rita wanted to wrap him up in her arms and

hold his dear head to her breast. She didn't, though. She patted him on the arm and said, "Good game."

He said, "Yes, I thought we played well."

"How are you doing?" she said. "How are you holding up?"

"I'm fine, Rita," he said. "Thanks for asking." His smile was genuine, but its dullness only made her feel worse.

"You know you can come to me any time, don't you?" she said. "If there's anything you need, anything at all."

He knew she was looking out for him. He could tell how much she wanted to ease his pain, and it hurt him even more that he couldn't help her do that. He knew he was broadcasting his misery and making other people unhappy, so he looked forward to his seventeen years being up and letting him escape into hibernation. "Thanks Rita," he said, "I know."

By the time the seventeen years was up, Elgin transformed waste treatment. Though he started out as a novice apprentice, within a few years he had responsibility for the whole thing. He made a few changes and increased the overall efficiency of the system by almost twenty percent and, with the help of his little friends the bacteria, turned it into a net producer of electricity. He also had some success in reducing odors. It was already very good. In an enclosed environment it has to be. But his improvements meant that catching a whiff of it was rare and an indication that he'd better have a look at it. If it smelled it needed tweaking.

The most important change wasn't in the operation of the system, though. Because of his example, working in waste reclamation became a desirable job. People no longer did it grudgingly to pay off their twenty percent. Now they were lining up for the privilege. Working with him during his tenure became a premium status symbol, and working there after he was gone was almost as good.

At last it was over and he could go join Fran at the Center. As he drifted off he thought about the fact that now he was seventy-three years old, and she was fifty-six.

When Elgin woke up eighty years later, Fran was there looking healthy and happy, but no one was as optimistic as last time. They were right to be cautious. Although she seemed to be alright for the first year, signs of deterioration began to appear.

Eighteen months in she was getting ill and had to start thinking seriously about preparing for hibernation. She had several long talks with the Doctor, which seemed to make her simultaneously sad, hopeful and philosophical. On their last evening together in their apartment, in the dim lighting of the middle of the night, she and Elgin were talking about the future.

"We're like microbes," she said. "Like bacteria. As long as we grow and divide, the Visitor will never be able to kill us."

"That's how it sees us, isn't it? Like an infection."

"Yes, and so it should." Fran's mouth was a firm line as she nodded. "It might feel safe now, but it doesn't know what it has unleashed on the galaxy. It's a race now. Who can spread faster? Us or the Visitor."

In the morning she awoke to find that she had been incontinent in her sleep. It only confirmed that she had to go down as soon as possible, but it also hurt her deeply. Weren't things bad enough without this indignity? Wasn't it enough that she would be separated from Elgin again, without disgusting him too?

Her crying woke him and he immediately took her in his arms to comfort her. When she apologized he told her, "It's you, Rannie. It's all you. I can't get too much of you."

That made her cry more, but it was tears of relief and love. It was cleansing and healing and it

eased the pain. He took her face in his hands and kissed away the tears. He could feel the bones beneath her skin. Her neck was so thin.

He carried her to the bathroom where she could have a shower, and he cleaned up the bed. He knew what this meant. Yet again he would rationalize losing her with the knowledge that she would at least be alive.

After her shower she said, "I wasn't crying only about making a mess."

"I know," he said.

"I have to go down today."

He nodded, his face sagging as if there were gravity.

"I've made arrangements with the Doctor to make it indefinite." His eyes were so wounded that it broke her heart. "It's getting worse every time."

"I know," he said.

"I don't want to be brought up unless there's a cure." It was out there now. The stark reality was between them. She waited for him to speak.

He dragged his voice up out of his stiff throat, weak and shaking. "You say it," he mumbled, "and I know it's right." Then he reached out and drew her precious body into his arms.

He stayed up for another four years, but he couldn't think of any reason why. Eventually the futility of it overcame his sense of duty to the comet and he took himself to the Center. He left instructions that they could wake him if they were bringing her up, but not otherwise. He was seventy-eight to her fifty-seven.

They didn't exactly follow his instructions. When the rescue team found Buzzard and brought him home, his friends woke Elgin a week before they got back. Stanton was his minder.

"Fran is still at the Center," he said repeatedly as Elgin came up through the levels. He didn't want any false hopes. When Elgin showed signs of focused awareness, Stanton told him, "We brought you up because we found Buzzard. He'll be here in a few days."

"Buzzard?"

"Yes, They found him right where you said."

"Is he all right?"

"As far as they can tell," said Stanton cautiously. "The equipment is functioning properly and the readouts look good." He chuckled. "The Doctor is on pins and needles. I had to talk him out of flying out to meet them."

The Doctor's name reminded Elgin. "Fran? Is there any news?"

Stanton shook his head. "There's still no cure. They don't even know what's wrong yet."

Elgin nodded morosely, but soon brightened. "Buzzard, eh? It's going to be great to see him. He must have a tale to tell."

He did, especially to Elgin. But first he needed to be brought home and re-awakened. Elgin wanted to be there but he was outranked by Stanton, who would be his minder. "I was just practising on you," he told Elgin. But they were both preempted by the Doctor, who took the returnees to the Center and ran an exhaustive series of tests on them, and on the equipment that had sustained them unattended for so long. Everyone was impatient to see them, but they all understood that an excess of caution was wisest.

As it turned out, they had nothing to worry about. The five were in fine shape, just as if they'd had a normal hibernation at home, instead of in a tiny vessel alone in the void. Elgin was glad they woke him, even though each hour he was up and she wasn't made him feel as if he was growing away from her.

When they finally had time to get together, they convened in Fran and Elgin's apartment. Even though it was empty most of the time, and then only ever occupied by Elgin for short periods, it was still thought of as theirs, not just his. The four of them, Elgin, Stanton, Buzzard and the Doctor, were together alone at last. All the celebrations and the recognition were fine, but they were looking forward to sharing a pot of iceberry tea. Here they would be talking to people who knew what they meant.

The most surprising thing was Buzzard's speech pattern. He was speaking more slowly and in longer sentences. He still occasionally said things two or more times, but it was no longer the rule. "I knew you would get it," he told Elgin.

"It took me long enough," said Elgin, still annoyed at his thickness. "I should have got it right away."

"You had other things on your mind." Buzzard knew all about the heart breaking saga of Frances. "The important thing is you got it, as I knew you would." To him the delay was trivial, especially compared to the loss of Frances. He would be having some long talks with the Doctor, trying to understand the situation, but now was the time for telling stories.

"The water ice rockets got us up to three gees," said Buzzard. "With nitrogen steam." It was obvious he'd been looking forward to telling this, particularly to Elgin. "Then we used a laser sail. A light sail. But only while the comet blocked the Scout. It couldn't see us." Their minds were all out there with Buzzard and his crew. "Then it was just maneuvering rockets."

That was just the beginning. The stories went on far into the night.

"What I want to know," said Stanton, "is how you got the Scout to keep destroying the comet. It went on far longer than necessary."

"Radio transmitters," said Buzzard. "We buried a bunch of radio transmitters."

"I thought it was something like that. Is that all it took?"

"No. We conditioned the Scout first by associating a weak radio signal with our weapons." Buzzard grinned. "We hoped it would react to the fake signals."

"It did," laughed Stanton. "You should have seen it." His smile faded as he remembered how it made him feel.

The apartment's ceiling went through its changes over their heads as the lighting in the Square went through evening to deepest night. They didn't notice, though, so engaged were they in each other's experiences. This was the best thing that happened to Elgin since he lost Fran.

In all, he stayed up for two years. It was good to work with Buzzard and Stanton again, and better than good to play flashball with Buzzard. It couldn't last, though. He felt himself getting further away from her and decided to go back down. Now he was eighty and she was still fifty-seven.

They woke Elgin again several centuries later when they had to decide whether to pick up a small comet. Orange Comet spotted it as they went by it far ahead of them. They would pass it at a considerable distance and it was only five kilometers in diameter, so the choice wasn't obvious. They thought Elgin's talent was just what they needed.

Elgin swallowed his resentment and looked at their numbers, and the answer was as plain as could be to him. He told them to send out a crew to divert the comet onto their course and pick it up. They needed the resources and the benefits here would far outweigh the costs.

Then he went directly back to the Center, leaving them with the distinct impression that he didn't consider this sufficient reason to disturb him, and that he would appreciate more discretion in the future.

He was still eighty to her fifty-seven.

They woke him again another several centuries later to honor the returning comet catchers.

They had no good reason for doing so, other than their feeling that he would want to be there. He didn't, but he put on a good face for the sake of the returning heroes, then went straight back to the Hibernarium. This time they would leave him alone for fifteen hundred years.

Now he was almost eighty-one and she was still fifty-seven.

Chapter Forty-Five – Elgin Goes To The Bubble

This time when Elgin woke up it was to find Minder, a young man with lights in his face and four arms. Minder had won a competition to be the lucky one who would take care of Elgin, and he was doing a fine job, whether he believed it or not. He'd taken Elgin to the Square and to a flashball game, and even though Elgin started out miserable and grumpy, he seemed to be feeling better.

Minder had another excursion planned for today and he couldn't wait to spring the surprise. They would be heading out right after breakfast, which was Elgin's favorite, coffee and iceberry muffins. Of course, Elgin could tell that something was up.

"Okay Minder," he said, "what's up?"

"What do you mean?" asked Minder, his face flickering through the rainbow.

Elgin's laughter wasn't cruel, but it made Minder blush even more. "I can tell when you're planning something," he said, finishing his coffee, "so let's do the dishes and you can tell me all about it."

Minder glumly began clearing the table. "I wanted it to be a surprise," he said.

Elgin took pity on him. "Okay," he said, heading for the sink. "I won't press you for it. Let's keep it a surprise."

When they went out they didn't go to the Square, taking another turn before they got there instead. The corridors they took got progressively smaller and less finished looking, and Elgin could tell that they were heading upward toward the surface. It seemed familiar to him and when they came to a small door set into the final, dead end tunnel, he was pretty sure he knew where they were going.

When Minder opened the door and ushered him through, he came out into the dark splendor of space, the galaxy glittering and shimmering before him. Elgin grinned. He was in Stanton's bubble, or at least a reconstruction of it.

"Well, you took your time," said a familiar voice from the back of the bubble.

Elgin turned. His enhanced eyes were already adapted to the low light and he could easily make out two people back there. The one who spoke was Stanton, and he came forward and embraced Elgin. He was squeezing hard so Elgin squeezed hard back, while looking past Stanton at his companion. "Galatea?" he asked, uncertain.

She came and took over the hug. "Move over Stanton," she said. "You always were such a hog."

When they broke the clinch and stood back to look at each other, all Elgin could think to say was, "Stanton?" Galatea had pronounced it differently. The glottal stop was gone and the second "t" was clearly enunciated.

Stanton rolled his eyes and Galatea laughed. They were acting just like a couple. She said, "That's how they pronounce it now. In all the legends and stories of the Five, that's how it is." Stanton was nodding wearily, and she grinned. "We just got tired of correcting them and decided to join them." She laughed again.

Elgin waited until he saw Stanton smile, then joined in the laughter. Stanton did too, and even Minder came in. It became one of those laughing bouts that went way beyond its initial trigger, and they didn't stop until they had tears in their eyes and the laughter trailed off into weak giggles.

Elgin wiped his eyes. "We must have needed that," he said. "I know I did." Stanton and Galatea were nodding and wiping their eyes too, and he noticed that they were glancing at Minder. "Oh, sorry," he said. "This is Minder, my, uh, minder. Minder, this is Stanton and Galatea."

Galatea, after the pleasantries, said, "Why do you still have a minder? You shouldn't need one

by now.”

Stanton frowned at her and apologized to them. “You know what she's like, Elgin,” he said, shrugging.

“Yes I do,” said Elgin, “and it's good to see it again.” To her he said, “You're right, I don't really need a minder any more. Not that I'm complaining, but I don't know why he's still here.” He looked at Minder, who blushed.

“Oh,” said Galatea, “I've never seen this up close.” She leaned in for a good look at Minder's cheeks. “You don't mind, do you?” He obliged her with a refulgent display. Stanton joined in the inspection.

“I'm getting used to it,” said Elgin. “He does it all the time.” He smirked indulgently at Minder's discomfort. “How about the second arms? Aren't they something?”

The attention made Minder uncomfortable, but he endured it and even gave Galatea and Stanton thoughtful answers to their questions. Stanton was like Elgin, able to see the utility and practicality of the alterations, but not likely to opt for them himself. Galatea, on the other hand, was intrigued by the second set of arms. “I could hang onto you twice as hard,” she said to Stanton with a salacious wink. “But seriously, it would be great for finishing work.”

Minder said, “The second hands aren't as dexterous as the first ones.” He held a pair up for comparison, to illustrate the difference between them. “Second hands are strong but they're nowhere near first hands for fine motor control.”

“I can see that,” said Galatea, taking a close look at the two hands.

“They'd be good for heavy work,” said Minder. “For roughing it in, maybe. But you'd want to use the first hands for finishing.”

“I get you,” she said. “And they're closer to the eyes, too.”

“That's right. If you were finishing this bubble, for instance, you'd naturally use your first hands for the close work.”

“Speaking of which,” said Elgin, “is that how you guys got together?” He gestured to indicate the bubble. “While making this replica of Stanton's bubble?”

“No,” said Galatea. “For one thing, this is no replica. This is the original bubble.”

“Really?”

“Yes. The people were so impressed by you heroes that they held a lottery for the privilege of going on a two hundred year rescue mission for a big ball of ice.” Stanton had turned away and was looking into the depths of space, obviously uncomfortable, but unable to hide his pleasure.

Minder spoke up. “I read up on this, knowing we were coming here.” He spoke directly to Galatea. “Wasn't it you who organized the lottery?”

Now it was her turn to be embarrassed, but she recovered quickly. “Stanton was playing hard to get,” she said. “I had to be quite industrious to bring him around.”

“So, you guys have been together for a long time,” said Elgin.

“Not as long as it could have been,” said Galatea.

“And most of it in hibernation, like you,” said Stanton.

“And you just happen to be up now, when I am?”

“No,” said Stanton. “When we heard you were going down for good, or at least indefinitely, we realized that we couldn't leave it at that.” He looked at Galatea. “At least I couldn't, and Gay was willing to humor me.” She came over and slipped her arm through his. Stanton smiled, obviously in love. “So we went down too, with a request to be brought up if you were.”

Elgin was touched. He looked at Minder, who was smiling happily. “Did you have something to do with this?” He was wondering how it got past him.

“Yes,” said Minder, blushing and looking down.

"Thank you," said Elgin. "Thank you all." He turned to include Stanton and Galatea. "You've made me feel so good. If only . . ." He stopped himself. There was no point in spoiling things with impotent wishes.

Galatea came over and put her arms around him, then added her wings. "Poor Elgin," she murmured. "Poor boy." Stanton came and joined the hug, looking over top with an invitation to Minder. They stayed like that, quietly sheltering Elgin until he stopped shaking.

Elgin was out at the front of the bubble, looking at the galaxy, lost in his thoughts. He knew that over the horizon there was another little comet, but it wasn't visible, hidden by the bulge of Green Comet. He smiled when he remembered Buzzard swooping in his pressure suit right outside this shell of ice. His smile remained, but it filled with pain when he thought of the times he'd spent here with Frances.

Minder was near the back of the bubble with Stanton and Galatea, looking at Elgin's back, trying to assess what just happened.

"You look surprised," said Stanton.

Minder nodded. "I am," he said. "I mean, I knew he missed her, but I had no idea it would still be so strong after all this time."

"Time heals all wounds, eh?"

"Yes." Minder shook his head. "I guess that's not always true."

"No," said Stanton. "This would be the exception that proves the rule." They stood in silence for a moment, then he said, "You know the legend, don't you?"

"Yes," said Minder. "Everyone knows the legend. There was a love of mythical proportions."

"Is," said Stanton. "It is a love of mythical proportions. That's why it's so painful to him. Because it's still there but she isn't."

Minder's face flared. "Oh, no," he said. "I've been thinking of it as historical, while for him it's still fresh and current."

Stanton patted his shoulder. "Don't blame yourself," he said kindly. "It's perfectly natural to think that way." He sighed. "The real problem is that the legends are untrue."

"What?" said Minder. "How can they be untrue? We have an unbroken record of the history of Green Comet. If it wasn't true it would be revealed by the facts."

"Oh," said Stanton, "there aren't any lies in there. The legends are based on actual events. The problem is they don't show things the way they really were." He glanced at Galatea and she nodded her encouragement. "I've seen the legends," he said, "and they make fine stories. But none of them gives an adequate description of what their love affair really looks like." He was looking at Elgin, but he was seeing Green Comet as it was more than fifteen centuries before. "The legends use fancy language to try to show it, but they don't capture what it was really like. What it looked like and what it felt like."

"What it felt like?" said Minder. "No one can know what it felt like except them."

"I mean what it felt like to us," said Stanton. "Everyone on the comet could feel it. When you looked at them, they glowed. Their love radiated out of them and made us all feel good."

Minder said slowly, "You're right. The legends are all about them. Setting them apart from other people."

"That's right," said Stanton. "And that goes both ways. They made Green Comet feel good, and the feedback made them feel more special. Not because they were apart from the rest of us, but because they were part of us."

"We still think they're special," said Minder. "Everyone still looks up to Elgin."

"Sadly, that just makes it worse." He noted Minder's disbelief and went on. "All it does is

remind him of how it used to be. The respect and admiration, even the reverence, it only reminds him of the vastly more powerful feelings he had when the two of them were together.”

Minder's face showed a blossoming understanding. He'd had an intellectual grasp on what the loss of separation must be like. Now he could feel it. All the trite homilies about no longer being whole gave way to the sense of amputation and the raw pain of the resulting wound that will not heal. He shivered. Now he had renewed respect for Elgin's strength and courage. He couldn't imagine how petty everything must appear to him.

There was a long silence. Elgin continued looking at the stars, a dark silhouette on the unchanging glow of the galaxy. The three of them watched him there, waiting for the right moment. Waiting for him to be ready. Finally they saw his shoulders rise and fall in a sigh, and Galatea said, “Come on.”

They joined him at the shell of the bubble, exchanging murmurs of greeting and consolation, and looked out on the stars together. “It kind of makes you feel small, doesn't it?” said Galatea, pointing with her chin at the vast display of light.

“And insignificant,” said Minder.

“Insignificant?” Galatea shook her head. “We might be small, but we're not insignificant.”

“You're right.” They were surprised by the sound of Elgin's voice, and by the strength of it. “That sounds right.” He paused, then told them, “Fran said we're like bacteria. And she meant it as a compliment.”

“Bacteria are small,” said Stanton.

“And they're not insignificant,” said Galatea.

“I think I get it,” said Minder. “It's like Green Comet and Orange Comet are bacterial cells. We're going to divide and spread through the galaxy.”

“That's right,” said Elgin. “That's exactly what she meant.”

After they thought about that, Stanton said, “Elgin, we're having a little get-together the day after tomorrow. We're hoping you'll be there.”

“Sure,” said Elgin. “We wouldn't miss it.”

Chapter Forty-Six – The Get-Together

The get-together was in a room off the Square, so they were flying there after breakfast two days later. Elgin wasn't saying anything and Minder was afraid to. He was castigating himself for being such a fool yesterday. He should have known better. He should have seen it coming. In hindsight it was obvious that Elgin wasn't ready to go on a talk show. But they'd been so convincing. They had assured him that they'd be gentle with Elgin, and it would be nothing more than a chance for the people to see him. Who knew the host would say something so stupid?

Minder was afraid to say anything, but he had to. They'd said almost nothing over breakfast, and now the silence seemed to be spreading. If they arrived at the get-together like this, it would cast a pall over everything, so he had to do something. "Elgin?" he said, cringing at the sound of his voice.

"Mm-hm?" said Elgin, looking straight ahead, concentrating on his flying.

"Are you all right?" Minder asked lamely.

"Mm-hm." Elgin wasn't helping at all.

Minder had to do this himself, so he went straight to the point. "I'm sorry, Elgin. I should have known better. I'm sure she didn't mean any harm." It embarrassed him to sound so pathetic.

They flew in silence for a few tens of meters, then Elgin stopped and turned to face Minder, who was able to stop within a meter or two. Elgin was frowning, but it was just for concentration, nothing like the dreaded legendary face. It looked several times as if he was going to speak, but he said nothing for a long time. Unlike the talk show host, Minder was able to wait quietly through the silence. Not comfortably, but quietly. He knew Elgin would speak eventually, and finally he did. He said, "She said I could have any woman on the comet." He was shaking his head. He still couldn't believe it.

Minder blushed. He was disappointed in himself, but he also found himself feeling angry toward her, even though he knew she meant well. In her own mind she thought she was flattering her guest, a technique that had always worked before. This time, though, it earned her several minutes of stony silence. Elgin growled, "I don't want any woman. I have Frances." Then he clamped his jaw and glowered at her.

She compounded the problem by saying, "But she's . . ." stopping just in time. She made the same mistake Minder made. She was thinking that it was history, and Frances was a legend, rather than an ordinary living person. She dug herself a deep hole before she stopped digging, but her instincts finally came through. She was able to see past what she thought she knew, to see Elgin as a man in love with his woman, Frances. She got hold of herself and showed clips from his life, watching his face for the right reaction, keeping things going until she hit on the secret. Ask him about her.

It worked. He was happy to talk about her, as long as she stuck to the real Frances. He had no time for the blatantly foolish legends, and when she mentioned the Francesians she almost lost him again. But when she asked about how they met or about the things they did together, he was relaxed and talkative. She managed to salvage a pretty good show, and she knew instinctively that it would be one of her best, certainly the most memorable. Most importantly, when they signed off Elgin wasn't frowning. He wasn't exactly smiling, but at least he wasn't scowling at her.

He had the same expression now, in the corridor, for which Minder was grateful. "I'm sure she meant well, Elgin," he said. "She talked to me after the show, and she apologized. I believe she really only wanted to give the people a chance to see you." Elgin nodded but still didn't say anything. "I'm really sorry," Minder said again.

Elgin finally spoke, but it was apparent his mind was on a different track. He said, "I need more practice, don't I?"

"What?" said Minder.

"Talking to people," said Elgin. "Having an ordinary conversation." He shrugged everything. "It seems like every time I talk to someone I don't know, I end up spoiling it."

"Spoiling it?"

"Yes. First the Francesians, then again yesterday." Elgin pursed his lips. "I need to learn how to talk to people."

"That wasn't your fault!" said Minder. "They should have known better."

"No," said Elgin. "I can't expect everyone to 'know better.' They can only be expected to know what they know." He nodded to himself. "I'm the one who should know better. I'm the one who knows, so it's up to me to do the right thing."

"But," protested Minder, "it's about Frances. They should give a thought to your feelings."

"Frances is a myth to them." Elgin's voice stumbled at that realization, but he carried on. "As am I. Our story has become nothing more than a legend. They don't think of us as real people."

"Well, they should!" insisted Minder hotly.

"Yes they should," agreed Elgin, "but until they do, I'm going to have to make allowances. Especially when it's about Frances." His gaze turned inward. "Especially then."

"But why should it be your burden?" Minder asked softly. "Haven't you done enough? Haven't you given enough? Let them do it for a change."

"This is what Fran would have told me. When people hold you up above them, it's an honor. But you pay for that with responsibility that you can never drop. It is always up to you." Elgin took a breath and set his shoulders. "I shouldn't have forgotten that," he said.

There was nothing for Minder to say to that, so when Elgin flapped his wings and got moving again, he just fell in beside him. They flew in companionable silence, the walls of the corridor sliding smoothly by. Soon the sounds ahead and subtle changes in air pressure told them they were nearing the Square, and right on cue the entrance rose up beyond the curve of the floor. In a few moments they broke into the light and color and vibrant life of Green Comet's commons.

Elgin stopped a few meters in from the green columns, looking at the natural focus of the Square. The statues of him and Frances and Nigel still stood there, the orange columns of the opposite side making an impressive backdrop. Elgin shrugged and asked Minder, "Where to?"

Minder swallowed and turned to their right. He raised his arm and pointed to a balcony above the shops on the yellow side, right over against the orange wall. He looked apprehensively at Elgin's face, which showed surprise and a rapid series of emotions. To his relief there was no anger or rejection. "Is it all right?" he asked.

Elgin found his voice and, giving Minder a reassuring glance, said, "Yes. Sure. It's fine." He pushed off in that direction. "Come on," he said. "Let's not keep them waiting."

Elgin wasn't as calm as he looked. The prospect of going into his old apartment, the home he shared with Frances, hit him harder than he might have thought it would. Being invited to a get-together there by someone else felt strange. If he let himself, he knew he could wind up in a jealous, territorial outrage. The very idea that an outsider felt entitled to invite him there was inflammatory.

He asked himself what Frances would do, and the answer was immediate and obvious. She would laugh at the irony and take great delight in the company of friends. That made Elgin smile at himself and his mood changed instantly to one of anticipation.

As they approached, an iceberry patch resolved itself in his vision. It was on the wall to the right of their balcony, right where he and Frances had originally started it. Of course, this wasn't the same iceberry patch. That one was destroyed when Green Comet went into black mode to hide from the Scout. Now, in the name of accuracy, it was back where it used to be in this faithful replica of his old life. He altered their trajectory to take them to the iceberries rather than directly to the apartment.

When they got there he picked a big, plump one and popped it in his mouth. After savoring the mouth-watering burst of flavor, he said to Minder, "They're always best right off the wall, aren't they?" He looked at the small patch and the expanse of empty wall around it. "There's a lot of wasted space here, isn't there? Why such a small patch?"

"People wanted it to be like it was," said Minder.

Elgin was going to point out the foolishness of that when there was a buzz and a flash of color, and he found himself looking at a hummingbird. Speechless with surprise, he watched it plunge its beak into an iceberry and begin feeding. He glanced at Minder, who smiled and nodded, then went back to watching the bird. It took a good long drink from the berry, then went on to another. Two seemed to be enough because it backed off, shot its tongue a couple of times, gave them a look and buzzed off. Elgin realized that the bird hadn't been flapping its wings while feeding. It seemed happily adapted to floating with its wings tucked away.

He asked Minder, "When did that happen?"

"Just a few months ago, actually," said Minder. "We decided to try a couple of breeding pairs to see if it would work."

"That must have been strange. How long did it take them to get used to microgravity?"

"Almost right away. The theory is that they have such a strong positional sense that the lack of gravity turns out to be secondary." He leaned in to examine the punctured, collapsed iceberries. "The big surprise was how they took to these. We started by putting out nectar for them, but they seem to prefer the berries."

"That is surprising. I'd have thought they'd need concentrated sugars. Iceberries are sweet, but not that sweet."

"That's exactly what everyone thought, but they seem to be able to adapt their metabolism."

"So, we're not the only ones who can adapt," said Elgin. He looked across the Square in the direction the hummingbird had flown, his gaze falling on the people there. His breath caught as he had a sharp vision of just how much they had adapted. From the warmth, security and especially the sense of belonging back on the planet, to this. He gasped at the vertigo when he visualized the isolation and enormous improbability of their situation. Then he thought of the hummingbird calmly feeding on an iceberry, and the look it gave them before it flew away. He chuckled and decided he would take it as a good sign. He looked at the bare wall and nodded. He would see to it that the iceberry patch grew. "Come on," he said to Minder. "Let's go inside."

They went in by the balcony, as he often used to, and they could see that there were people in the right-hand living room. Stanton met them at the entrance, with Galatea, and Elgin caught a quick flash of concern on his face before it was erased by a welcoming smile. Past him Elgin could see the Doctor, his bald head shining softly in the glow from the ceiling. There was another couple, and it took a moment of staring before he recognized Buzzard. Then it was a simple matter to deduce that his companion must be Maria. But what was wrong with Buzzard?

A movement in his peripheral vision brought his head around and there was Nigel. He couldn't stop a flash of disappointment at the presence of Fran's greatest adversary, but he tried to keep it down. He caught a glance between Minder and the Doctor, wondered about it, then packed it away for later.

He turned back to Buzzard and Maria, puzzled. He moved forward and Maria's eyes sharpened, but Buzzard wouldn't look up. Elgin glanced at Stanton and the Doctor, looking for some indication, but they both reacted with discomfort. Minder was obviously trying to keep his expression neutral, and failing as usual. Nigel looked as if he didn't see anything.

"Buzzard?" he said, moving forward again. Simultaneously, Stanton moved to intercept him, Buzzard turned his face into the shelter of Maria's body, and she raised a palm to stop Elgin, her

movements gentle but her eyes fiercely protective. For some reason it evoked a memory of the time Maria carried Buzzard in the hand of the smasher that day in the Square. Elgin stopped, his face perplexed. He looked the question at everyone, and Stanton tried to answer it.

"Buzzard is having a little trouble these days," he said, looking at his friend sheltering under the protective wing of Maria. "He overextended himself and is having a kind of mental exhaustion. He can't take too much stimulation or he gets anxious."

Maria nodded and the Doctor confirmed it. "Stanton is right," he said. "Buzzard needs a good long spell of rest and recuperation."

Elgin asked the obvious. "Then what's he doing here? And should we be talking about him as if he weren't?"

"Ah," said the Doctor. "Normally that would be rude, but in his condition, with his inability to interact directly, talking about him like this is a good way of including him." He nodded assertively. "And he insisted on being here, just like the rest of us."

"Insisted on being here?" repeated Elgin. "At this get-together?"

"Yes," said the Doctor. "We all wanted to be here for this."

Elgin looked at them all. Stanton nodded and Galatea winked at him. Maria smiled and Buzzard was peeking out from under her wing, though not making eye contact. Nigel nodded while looking in the direction of the Doctor, who looked deeply satisfied. "All right," said Elgin to the Doctor, "what's going on here?"

The Doctor, smiling broadly, started to speak, stopped, tried again and paused. After a murmur of laughter, he said, "After working for this for so long, there's too much to say all at once." Everyone made noises of agreement.

"Just start talking, Doctor," said Elgin. "I'm sure it will sort itself out."

"Okay," said the Doctor, "I guess the best place to start is why we all wanted to be here for this." He looked around and got general agreement. They seemed to have decided that he could do the talking. "Very well," he said. "Elgin, you remember saying that you didn't want to be brought out of hibernation without a good reason, don't you?"

"Yes," said Elgin, his skin prickling. "And I remember being brought up for supposedly good reasons, too."

"Yes," said the Doctor. "Sorry about that."

"It's not your fault. It wasn't you."

"No. If they had asked me I'd have told them to leave you alone." Everyone voiced their agreement. "Unfortunately, I was asleep at the time."

"Never mind," said Elgin. "What's done is done. I assume you have a good reason this time." He swallowed and finished tentatively, "It must be about Frances." He looked frightened.

The Doctor hurried to reassure him. "She's okay, Elgin. Nothing has happened to her. She's still safe at the Center." When Elgin relaxed, he continued. "The thing is, we think we've figured out the problem." With a gleeful chortle in his voice, he said what he'd waited centuries to say. "We think we're going to be able to bring her up at last."

Elgin had nothing to say. His mind went blank for a moment, then filled with swirling fragments of thought. The Doctor waited, not pressing him for a response. Finally Elgin settled his brain down enough to speak, but what do you say about something you've hoped for so long? When it's been unattainable for so long that you've unconsciously begun to believe that it could never happen. How do you start to believe again? "Really?" was all he could say.

"Yes," said the Doctor. "We think we finally know what the problem is, and how to fix it. We have Buzzard to thank for that."

Elgin looked at Buzzard, who was now completely out from under Maria's wing, though still

looking nervous and fragile. He met Elgin's eyes, but couldn't hold them, looking down and away. Maria spoke for him. "Buzzard decided to study the problem," she said, "many centuries ago." She shook her head. "I couldn't tell you how long he's been doing it."

"But he's an engineer," said Elgin, "not a geneticist."

"I know," said Maria. "That's what I said when he wasted waking after waking. When the wakings got shorter and farther apart. When he got so deep into it that he began to lose the ability to function in the real world." She was looking at Buzzard, her eyes furious and glowing with love. "But he told me he had to do it. And he told me he would understand if I wanted to leave." Tears floated away from her eyes. "As if I could do that."

Buzzard struggled to speak. In a slow, tired variation on the repetitive way he spoke when Elgin first met him, he said, "Okay. Was okay. Not crazy." Then he buried his face in Maria's fur.

Elgin was almost overcome by their generosity. "I know you're not crazy, Buzzard," he said.

His voice muffled by Maria's fur, Buzzard struggled to say, "All done. Ten times. All good."

Elgin, his voice catching, said, "No magic?"

With a tired version of his delighted smile, Buzzard said, "No magic."

The room relaxed with a general sigh. Maria looked at Elgin over Buzzard's head, her smile acknowledging his gratitude. She lifted a hand, opening her embrace, inviting him to enter it. He flew across and joined in her protective hug, feeling Buzzard's body tense, then go quiet again. "Thank you, Buzzard," he said softly, gratified by the murmured response.

So close to Maria's face, he whispered to her, "Thank you, too." They stayed that way, mingling their breath, their warmth and their auras, until the moment was right for Elgin to gently break away. He said to her, "What else do you do? For work, I mean. When you're not taking care of Buzzard."

She grinned at him. "I operate smashers," she said.

Buzzard said, "Huh," which was his present version of the peals of laughter they were all used to. That allowed everyone to laugh, discharging some of the tension.

Elgin turned back to the Doctor, on the left side of the room, opposite Maria and Buzzard. "I want to know everything," he said, "but first I want to know why all this was kept from me."

"Of course," said the Doctor, nodding his glowing dome. "We kept it from you for two reasons. The first was a request from Fran."

That surprised Elgin. "She wanted you to keep it from me?"

"Yes. She made me promise that you wouldn't find out until there was at least a glimmer of hope."

"But why?" Elgin couldn't understand his Fran conspiring to deceive him.

"She was afraid," said the Doctor. "She thought that she might end up as some grisly, undead thing stalking your mind. Better, she thought, to just be quietly asleep."

Elgin reflexively rejected the idea. He knew she could never become that to him. But then he thought back to the misery and darkness he'd endured anyway, and he bowed once again to her greater wisdom. She knew him better than he knew himself, and she could foresee what was still unclear to him in hindsight. He nodded and said, "Okay. And the other reason?"

"The other reason," said the Doctor, "had to do with you." He glanced at the others for moral support before saying it, then, "We had to be sure of your mental state."

"My mental state?" Elgin was shocked. They were talking about his mental state behind his back? Everyone was embarrassed when he looked at them. "There's nothing wrong with my mental state."

"We know," said the Doctor. "We know that now." He waited until Elgin caught his eye, then stated their case clearly. "Just as much as we're trying to return Frances to you, we also want to ensure

that we return you to her. Healthy and whole.”

Elgin was glaring at him, and he swung it around the room. All he saw, though, was concern and love, and he knew they were right. What would be the point of bringing her back to him if he was too messed up to be any good to her? He nodded. They were right again.

“You see,” said the Doctor, “if we’d found you were unwell, then we could simply have delayed bringing her up while we treated you.”

“Of course,” said Elgin. “It’s just the idea of it all happening without me knowing about it.”

“I understand,” said the Doctor, “and I apologize. But we couldn’t very well tell you, could we?”

“No, of course not.” There was a contemplative silence, then Elgin said, “How did you manage it, anyway? I can usually tell when something rings true or not, and nothing jumped out at me.”

“Ah,” said the Doctor, indicating Minder, “your minder is responsible for that.”

Elgin looked at Minder, who blushed. “Minder?” he said incredulously. “But how? He couldn’t keep a secret if he was the only person on the comet.” Minder blushed harder.

“Well,” said the Doctor, “you might have noticed that he blushes a bit.”

“Yes. It caught my attention.”

“So, what better camouflage?”

The realization hit like a smack in the mouth. Elgin remembered all the times he thought Minder was over-reacting to something and realized that many of them could have been alerting him that something was up. He didn’t notice because he assumed it was just Minder blushing again for no reason. What better camouflage indeed. He grinned at Minder, who surprised everyone by blushing even harder. “You bugger,” he said. The resulting blush got murmurs of appreciation and a smattering of applause.

“You guys!” pleaded Minder, but he was smiling.

When they entered the apartment Minder stopped just inside, staying near the window with Stanton and Galatea. Now that Elgin was looking that way, Stanton caught his attention and indicated a display screen on the left wall, over the Doctor’s head. When everyone was looking he started a video, eliciting a gasp of recognition from everyone except Nigel. Showing on the screen was the familiar monochromatic record of the joining of the comets. The original joining, from before the Visitor. But this was a very specific angle. It could only have been taken by someone who was outside, far from Green Comet, where they could see around the curve of the little comet. This could only be Buzzard’s video of his smoke rings, all copies of which he had destroyed during the debates.

“What is this,” asked Elgin, “a recreation?”

“No,” said Stanton. “This is an original copy.”

“But, I thought Buzzard destroyed them all,” said Elgin. “During the debates, when we were making sacrifices.”

“You and everyone else,” said Stanton. “That was the idea.”

“You mean you and Buzzard held a copy back?”

“No. Absolutely not. Buzzard believed he destroyed them all.” Stanton grinned a wicked grin. “Buzzard’s a bright boy. He’s smarter than anyone I know. But this old fox is pretty sly too.”

“Huh,” said Buzzard. “Huh-huh.” His face, the eyes swinging between the screen and Stanton, was almost animated. Those who knew him could see his old grin underneath there.

“You people are full of surprises,” said Elgin. “Is there anything else?” He looked pointedly at the Doctor, who seemed to be the most like a host of the party.

“Well,” said the Doctor, “now that we’ve ascertained that you’re fit for duty, we might as well talk about bringing Fran up.”

That shocked Elgin, even though he now knew that was why they were here. Even though he thought he was ready for it, as ready as waiting fifteen hundred years could make him, the sudden immediacy shocked him. He found himself looking for some way to delay it. In truth, he was surprised to find that he was afraid of it.

"What is it, Elgin?" asked the Doctor gently.

"Well," said Elgin, "it's been so long." His eyes were vulnerable and frightened. He swallowed and said quietly, "I'm so old." He was afraid that they might have grown apart, especially as he kept aging while she didn't. "What would she want with an old man like me?"

"You're worried that you're too old for her," said the Doctor.

"Yes," said Elgin. "She stayed young while I kept getting older. People will think she's with her grandfather."

The Doctor chuckled. "I think that's a little extreme."

"Yeah, well, what about our life expectancy?" said Elgin. "When I'm gone she'll have years of being alone, and I know what that's like."

"Elgin," said the Doctor, shaking his head, "have you looked in a mirror lately?"

"Sure. Why?"

"Haven't you noticed that you look about forty?" The Doctor indicated their companions. "Haven't you noticed that we all do?" He corrected himself. "Except Minder, of course."

Elgin looked, taking care to really notice, and it was true. They all, with the exception of Minder, looked about the same age. As the Doctor said, they all appeared to be about forty years old.

"And it's not just appearance," said the Doctor. "All our organs, all our systems are close to the same physiological age. Hibernation and its maintenance and repair activities seem to keep us there. So, when we wake up Fran, you'll be the same age."

"Oh," said Elgin. He looked at his hands, turning them over and back. They looked the same as ever, but only now did he realize the significance of that. He laughed at himself. "There's something else I missed," he said.

"You're not the only one," said the Doctor. "It took a long time before it dawned on me, too. Or anybody." He nodded while everybody voiced their agreement. "I really don't have enough data to make a proper estimate, but working with what I do have, and keeping in mind everything we don't know, I think we should be good for at least another hundred years." He frowned. "Effay," he added. "If nothing unexpected happens." He turned up his palms. "It's nothing more than a guess, really."

Everyone laughed, assuring the Doctor that they wouldn't hold him to it. "We got it," said Nigel, properly joining the conversation for the first time. "We should live another hundred years, give or take, but it could be a thousand, for all we know, or we could start dropping tomorrow. Does that about cover it?"

"Yes," said the Doctor, pleased that they understood. "But the likelihood of a thousand years, or of tomorrow, is relatively low. Splitting the difference at a hundred seems logical since that is closest to our normal range. It's still just a guess, though."

"It's good enough for me, Doctor," said Nigel. "I'm grateful for anything, really."

"Mm-hm," said the Doctor.

"Mostly I'm grateful that I lasted long enough to find the Spy." Nigel gave a deep sigh. "Long enough to fulfill my promise to Frances." He looked at Elgin, though not quite.

Elgin moved his head, trying to meet Nigel's eyes, but when he finally did there was still no connection. He realized that here was something else he'd missed. Nigel was blind.

The silence told Nigel that Elgin had noticed. "Yes, Elgin," he said, "I'm totally blind."

Elgin stared mutely. He couldn't think of anything to say, and his curiosity made him want to minutely examine Nigel's eyes, to find something that his engineer's brain could figure out. Finally his

innate comet politeness made him speak. "I'm sorry," he said. "What happened?"

"It was those fourteen years outside in a pressure suit," said Nigel. He glanced at the Doctor, his sightless eyes including him. "The Doctor warned me," he said. "He tried to get me to come in. To go to the Center and get fixed up. But I had a job to do. No one else knew as much as I did. No one else would have cared as much."

"Fixed up?" asked Elgin.

The Doctor jumped in. He knew Nigel didn't really want to go into the details, so he did it for him. "Cancers," he said. "All those years of constant exposure to cosmic radiation did a lot of genetic damage." The Doctor shook his head. "I tried to warn him, but he kept brushing me off."

Nigel had turned his blank gaze down, obviously not comfortable with the exposure. Elgin said, "I understand, Doctor. Nigel had a job to do. A job for Frances. He couldn't concern himself with the possibility of getting sick sometime in the future."

"It was more than a possibility!" said the Doctor.

Nigel stepped back into the conversation. "It's not as bad as it looks, Elgin. It's the last thing to clear up, then I'll be fine."

"Why didn't you stay in hibernation? Why would you come up when you were still sick?" asked Elgin.

"The same reason as everyone else," said Nigel. "I had a request in to be brought up if there was to be an attempt to revive Frances." He raised his chin. "Whatever condition I was in."

Elgin could hear the music and it was good. He could finally see Nigel for what he really was. Not a fool or a villain for opposing Frances. He was obviously a good man whose dedication to the comet was at least as great as his own. As was his dedication to Frances. He said, "I understand, Nigel. Some things just have to be done, whether for the comet or for Frances."

Nigel nodded. "I knew you'd get it," he said. "We're more alike than you know." Again he looked at Elgin, his blind eyes not quite making contact. "I'm in love with Fran too, you know."

Elgin felt a little rush of jealousy, which he tried to quell. "I know," he said. "Everyone's in love with Fran."

"I don't just mean that," said Nigel. "I mean head over heels, forgetting to eat, flying into things in love." He paused but Elgin didn't reply. "I was just like you," he said. "About a year before you got up, I was smitten too."

This time Elgin did speak. "Well, then," he said, "why didn't you do something about it?"

"I did," insisted Nigel. "I tried talking to her, but I kept ending up either tongue-tied or prattling. I got on the planning committee so I could be around her, but I could never bring myself to take advantage of it." He shrugged helplessly. "I wanted her, but I could never imagine that she could want me."

This was ringing bells for Elgin. He'd had all the same symptoms. The difference was that Fran had acted to overcome them, otherwise he probably would have ended up like Nigel. He was right, they were a lot alike.

"Well," said Nigel, "eventually I missed the moment. After a couple of months of dithering I just gave up. I knew I wasn't going to be able to do it, so I decided to save myself the stress." He laughed at his younger self, but not derisively. He had more of a kindly sympathy for him. "After that I tried to find ways to make myself more useful to her. To stay close, you know?"

"Yes," said Elgin, "I do. I most certainly know that."

"Then when you came along," continued Nigel, "and I saw the two of you together, I saw what could have been."

"Is that when you began to oppose her?" asked Elgin.

Nigel gasped in surprise, his mouth open but unable to speak. Sounds of protest came from the

others. Elgin heard the voices of Stanton and the Doctor saying “No!” and, “It was never like that.” Nigel spoke at last. “I was never opposed to her, Elgin.”

“But the debates,” said Elgin. “The things you said.”

“Those were things that needed to be said,” Nigel told him. “I knew it and so did Fran. In fact, she asked me to fight hard. She said the comet needed it. She said we needed to make that decision in the face of the clearest of options.” Nigel’s gaze was now obviously in the deep past. “She knew,” he finished quietly, “that Green Comet would be better off if we went with our eyes wide open.”

Once again Elgin heard it. He knew Frances would have said exactly those things, for exactly those reasons. The music was harmonious. His respect for Nigel deepened and he felt ashamed of his earlier suspicion. The man had acted with honor and an honest sense of duty. Now, at last, he could see clearly. “I see now,” he said, “why Fran had so much respect for you.”

Pleasure blossomed on Nigel’s face. “That makes it worthwhile,” he said. “Fran’s respect means more to me than anything.”

Elgin looked at him, moved by empathy. He couldn’t imagine loving Fran that much and conceding her to someone else. “Do you ever wonder,” he asked, “what might have been?”

“Sometimes,” admitted Nigel, “but it never lasts long.” He smiled at Elgin. “As soon as I saw you two together, I knew it was right.”

“But it could have been you,” said Elgin.

“No it couldn’t. The difference between what I felt and what you guys had was immediately obvious. When you were together, you glowed. There’s no comparison.”

“I don’t know,” said Elgin. “If it was me, I don’t think I could be so generous.”

“Are you sure? If you saw that it was so right? If you saw Fran so happy, do you really think you would deny her that?”

Elgin thought about it and knew it was true. Nigel was right. They were more alike than he realized.

The Doctor broke the silence. “Why don’t we see if we can let Fran speak for herself?” he asked. “I think it’s high time we finish the talking and start the doing.”

They all agreed and Elgin said, “I’m ready. Let’s go.” He made as if to turn for the door.

“Hold on,” the Doctor said, laughing. “Just a minute. We still have to finish with the talking.” When Elgin turned back and tucked in his wings, he said, “There are some details you should think about.”

“Okay Doctor,” said Elgin, taking a listening pose.

“Right. So, you’re well aware of Frances’ imprinted genes.”

“Yes. They’re the reason she keeps getting sick.”

“That’s right,” said the Doctor. “At least, that’s what we thought.” When Elgin’s gaze sharpened, he added, “It turns out that we had those repaired properly the first time.”

“What went wrong, then?”

“We couldn’t figure that out.” The Doctor scratched his smooth head. “So we did the obvious. We repaired and activated the dormant side of the gene pair, just in case.”

“Don’t tell me. That didn’t work either.”

“No.” The Doctor spread his hands, reliving the frustration. “We were out of ideas. When Buzzard offered to do one of his deep analyses, we were glad of the help.”

When everyone looked at Buzzard he ducked his head to escape the intensity, but he raised a hand in acknowledgement. The Doctor said, “Buzzard’s work quickly showed that all our initial attempts were successful. Fran should have been able to live a normal life.” He shrugged expressively. “She should have been better than before, since we managed to repair her imprinted genes.” He cocked

an eyebrow. "That's a real breakthrough, by the way."

"But it didn't help," anticipated Elgin.

"No!" He raised his fists in front of him, as if to attack an unseen enemy. Lowering them to his lap, he said, "You have no idea how frustrating it was."

"Well," said Elgin, "I have some idea. But I take your meaning."

"Of course," said the Doctor, mildly abashed. No one could have a better sense of the frustration than Elgin. "Anyway, to shorten a long story, Buzzard finally figured out that the problem was in the telomeres."

"Telomeres?"

"Yes. I won't go all technical on you. Telomeres are little things that keep the ends of chromosomes tidy." The Doctor saw incomplete understanding in Elgin's face. "Like a rope, say. It needs some way of securing its ends so it doesn't unravel." That was better. "So, when Buzzard figured that out, we were on our way."

Elgin said, "So, the telomeres were unraveling?"

"No," said the Doctor. "That's the thing. They were holding together just fine. That's why we didn't know there was anything wrong with them."

"What was it, then?"

"When Buzzard analyzed it he didn't stop there," said the Doctor with a smile. "He took a good look at the telomeres and discovered that they weren't working properly, even though they seemed fine by outward appearances."

"Okay. Then you fixed them?"

"Hah!" said the Doctor, rolling his eyes. "If only it could have been that easy. No, we had to find a way of making them work without unraveling." He took a breath. "Anyway, that was long and difficult, especially for Buzzard." He shook his head. "Can you imagine the variables?"

"No," said Elgin.

"Me neither. But the upshot is that Fran's telomeres will work and will never unravel. We hope, anyway."

"You hope?"

"Oh, the odds are really good. It's just that I can never promise a probability of one on something like this. It wouldn't be honest." He added in a reassuring tone, "But it looks very good."

"I understand, Doctor," said Elgin. "Thank you."

"You're welcome, but thank Buzzard mostly. We put a lot of effort into it but without his insights we'd have got nowhere." He paused while Buzzard was showered with congratulations. "And you can thank millions of little machines as well, for many years of untiring, meticulous work."

"You mean the nano tools?"

"Yes," said the Doctor. "They look for blockages and whatnot. Scan and repair genes. Destroy cancerous cells."

"I know," said Elgin. "I mean, I've never worked with them, but I know about them."

"Very good," said the Doctor. "They move in liquid nitrogen, which is why we need to keep the sleepers a little warm, and they're powered by induction."

"I know most of this, Doctor."

"Of course you do, but please indulge me." When Elgin nodded, he continued. "These little machines can send and receive signals, and they combine to form a network. Each one has a tiny bit of memory and a tiny bit of processing power, but together they form a quite powerful computer. The result is a machine that can analyze in the whole and act in the particular."

"Okay," said Elgin. "All things we learn during orientation."

"Ah," said the Doctor, "but something they don't teach you in orientation is that all these

features combine to create the conditions for complexity. There's the large number of components, the high degree of connectivity, the, uh . . ." He looked at Stanton, asking, "You know. Where the system gets energy from an external source."

"Thermodynamic openness," said Stanton.

"Right," said the Doctor. "I always forget that one. Anyway, all these things go together and, under the right conditions, give rise to an emergent system. A novel entity that didn't exist before and couldn't be reliably predicted, but which is maintained as long as the conditions are met."

"I know a bit about that," said Elgin. "You end up with something called a complex, adaptive system."

"That's right," said the Doctor. "Essentially you get a whole which is more than the sum of its parts."

"Okay," said Elgin, "so the nano tools work together to form this new entity. How does this affect Fran?"

"It has everything to do with Fran because it was her hunch that made us look at it and run the experiments."

"Experiments?" said Elgin. "You experimented on Fran?"

"Not on her, as such. Rather, we experimented on the system, as suggested by her, to see if there might be something there we were overlooking." The Doctor looked pleased with himself.

"There was," he said. "Or rather, there might be. If this turns out to be real, then the nano tools might be good for more than repair work."

"Like what?" asked Elgin, content to let the Doctor indulge himself.

"Fran thought there might be something going on there, so she got us to build a detector to look for patterns. It took a long time and at first it didn't look as if anything was happening. Eventually, though, when we looked on long enough time scales, something began to emerge."

Elgin's mind was jumping ahead, but he refused to allow it. "What?" he asked quietly.

The Doctor was so excited that he rubbed his hands vigorously. "Fran's hunch was that there might be a form of consciousness down there."

"This emergent machine might be conscious?"

"Kind of," said the Doctor, "but more than that. Fran thought that because the nano tools crudely replicate the structure of the brain, and because they have similar connectivity to the actual neurons, then maybe the person has a form of consciousness. Or maybe a consciousness emerges that is similar to the person." The Doctor shrugged again. "It's really hard to say."

"Are you saying that Fran might be conscious down there?"

"Well, yes, maybe."

"You've got to send me down," said Elgin. "You've got to send me down now." When no one moved, he shouted, "She's all alone!"

The Doctor raised his hands, saying, "No, no, no. It's not like that."

"What do you mean?" demanded Elgin, unplacated. "How do you know? She's been alone for over fifteen hundred years!"

"Just wait, Elgin," said the Doctor. "Hear me out." When Elgin subsided, he said, "If what the detector found is really a sign of consciousness, and that's still a big question, and if it's her and not some other phenomenon, then it must be operating at an extremely slow rate."

"Slow? What does that mean?"

The Doctor frowned, then said, "I won't bother trying to lay out the whole thing. Suffice it to say that before she went down Fran arranged a little test. We were to begin a simple pattern and she was to reply by completing it."

"Did it work?"

“Yes, it . . .”

“Then it's her. What else could it be?”

“I agree,” said the Doctor, “but please let me finish. At first we thought the experiment was a failure because we got no reply. We didn't give up, though. We kept collecting and analyzing data and finally, after a long time, we began to see a pattern.”

“What do you mean by a long time?” asked Elgin.

“Years,” said the Doctor. “Eventually we calculated the ratio to be approximately twenty years to one minute.”

“Twenty years?” Elgin was already calculating how many minutes that would be for Fran, but he was also intrigued by the philosophical question. “How can something operating that slowly hang together?”

“That's the question, isn't it?” said the Doctor. “That and whether it's really her, and we won't know that for twenty years either.”

Stanton cleared his throat. “It's not necessarily impossible that something could work that slowly. Our brains don't calculate as quickly as computers do, by the same kind of ratio, and we don't have a problem with that.”

“That's true,” said the Doctor. “We can't dismiss it simply because of the time factor.”

“But calculations aren't consciousness,” said Elgin, tempering his hopes.

“That's also true,” said the Doctor, bringing them back to nowhere. Everyone was quiet, thinking about the possibilities, then he said briskly, “There's only one way to find out, and that's not going to happen today. So meanwhile, let's have some tea and tell some stories.”

No one had an argument with that.

Chapter Forty-Seven – Elgin Goes To Sleep

“Do you remember when I told you about Fran's telomeres?” the Doctor asked Elgin. They were having a final meeting in his office before Elgin went down.

“Sure,” said Elgin. “I'm practically an expert now.” He was nervous. This was going to be the biggest thing he'd ever done, and he didn't know what to expect.

“Of course,” said the Doctor, “but there was one thing I said that I think didn't really register.” Elgin became alert and apprehensive. “When I said her telomeres would never go away, I didn't just mean that they would be working again.”

“What, then?”

“We think they might be working better than ever. Normally our telomeres get, well, used up during our life.” He was demonstrating with his hands, plucking off telomeres one by one. “Fran's weren't, which was why we couldn't see what was wrong.”

“But you fixed that, right?”

“Yes. At least we think so. Now, if all goes well, her telomeres should work again.” The Doctor raised a finger. “But now they won't wear out. They won't get used up.”

“That's good though, isn't it?”

“Yes. It's very good because the loss of our telomeres is implicated in cell death, which leads to aging and our own death.”

Elgin became very still, even holding his breath. Very quietly he said, “Do you mean Fran might live forever?”

The Doctor raised an admonishing hand. “I can't say that,” he said. “There are too many contingencies. Too many unknowns.”

“But it's a possibility,” said Elgin.

“Yes, it's a possibility. But we'll have to wait and see, as with everything else.” He listed a few. “Is Fran conscious down there? Is anything conscious there? Will Buzzard's modifications work? Will Fran be able to stay up this time?” He turned his palms up. “The least of it is whether she'll live forever.”

“I suppose you're right,” said Elgin. “One step at a time.”

“That's right,” said the Doctor. He became more somber and Elgin could tell that something serious was coming. “We also have to consider the worst possibilities. You have to be ready for them. Not that you can't have hope and optimism, only that you should be prepared to deal with the opposite.”

“Okay.”

“The longevity question won't be answered for a long time. We'll have to monitor her over one or two wakings to see if she ages normally.” The Doctor smiled a cautious smile. “You know, if this works for her, there's no reason why we can't do it for everyone.” He caught himself. “With their permission, of course.” The comet had learned its lesson about making modifications without asking.

“It's not something I need to worry about now, though.”

“No,” said the Doctor. “And the same with whether she'll be okay when she gets up. We'll only know that later as well.” He looked Elgin in the eye and said, “Your more immediate concern is what you're going to find when you get down there.”

“Or whether I'll find anything,” said Elgin. “It might be like any other hibernation. I'll go to sleep and next thing I know I'm waking up.”

“Quite right,” said the Doctor, “But our detector does show something, and it's reasonable to

assume it will show something in your case as well. It seems to imply that you'll have some form of awareness." He finished quietly, "We just don't know what it will be like. No one has ever reported anything like it. We have to be ready for anything, including the possibility that it's causing her harm."

"What kind of harm?"

"I don't know, but there's a chance that such a situation could drive a person insane."

Elgin sat quietly for a long time, then said, "If it could do that to her, it could do it to me. What use will I be to her then?"

"That's true," said the Doctor, "but she's been there for a subjective seventy-five minutes, if our estimates are correct. You'll only be there for a minute."

Elgin stared at the desktop between them, not speaking and not moving while the Doctor waited patiently. At last he drew a deep breath and looked up. "If it's that bad then I can't leave her there alone for another minute," he said. "Let's get going."

Elgin's senses fell away as he sank into deep sleep, but his sense of mission persisted. He felt as if he was on his way to rescue Frances, to lift her out of this limbo and bring her back up to the light and life of Green Comet. As darkness closed in on his awareness, he thought of her and all he'd learned, both at the get-together, and later in the Doctor's office.

Could she really be conscious down there? What if she's not? It might just be random noise and they've seen what they wanted to see. Worse, what if she is there, but she's been deranged? That frightened Elgin as nothing before. Even their brush with the Scout was mere mild apprehension compared to that. As the light in his mind dwindled to a dot, he bravely faced that possibility. "Well, Elgin," he said, "if she's in trouble then she needs your help, that's all." The familiar flavor of steel infused him, and he descended in calm resolve.

He sank into darkness, on the practiced approach to oblivion. There was a moment of blankness, or was it eons? He only realized it had been blank when he became aware of the gray light. His heart fell and he tasted the bitterness of disappointment. They had failed and were bringing him up again. Damn them!

"Damn you!" he roared.

Out of the fading echoes he heard a tiny golden sound. The most beautiful chord in the universe. He was washed in colors and tastes so familiar, so sharp that they hurt. In flutters of rose he heard her say, "Elgin? Elgin, are you there?"

The gray light began to resolve. Was that her face?

"Rannie?"

A photograph of a person sitting at a black metal table outdoors, reading a book. The person is wearing a light-colored shirt and blue jeans, and is seen from the side. On the table, there is a stack of books and a small object. The background features a wooden fence, lush green trees, and a grassy area. Sunlight filters through the leaves, creating a dappled light effect. The text "Green Comet" is overlaid in green at the top left, and "Jim Bowering" is overlaid in green at the bottom right.

Green Comet

Jim Bowering