

**TOM SWIFT**  
**And The**  
**Paradox Planet**

By Victor Appleton II

Made in The United States of America

Technical editing by Greg Hall

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THE NEW TOM SWIFT INVENTION SERIES

# Tom Swift And The Paradox Planet

By Victor Appleton II

Following a life-changing event for Tom Swift, the world is taken by surprise when the report comes through that a planet in our own solar system suddenly disappeared from its orbit. Traditional means of scanning the sky can't locate it, so the Government asks Tom Swift to investigate.

An unmanned probe designed to look for any mass out there fails to find the wayward planet before it, too, mysteriously disappears. And, when a second, more capable probe is suddenly grabbed and flung out of its path, Tom knows that he must go see what is out there.

A totally new type of ship will be designed and built. Nothing he has available can make the trip and do the things he wants or needs to do. But another surprise is in store when something slightly larger than the missing planet appears and starts hurtling in toward a possible impact with the Earth.

What is suddenly hurtling on a collision course? Can Tom find a way to deflect it before even a near miss might mean massive devastation on our planet? Will the world governments insist that he destroy it with a nuclear warhead?

And, can he find out who is responsible for it all?

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This book is dedicated to the men and women who design, build, launch and watch over all the satellites, rovers and planetary voyagers out there. We now know more about some of our neighboring planet than ever before, and perhaps a little more about our own fragile rock in space. And, thanks to LLL for the characters I stole! Borrowed, I mean, of course!



At that moment, the unseen accomplice walked up behind Tom and shot him in the back of the head. **Page 50**

# TABLE OF CONTENTS

CHAPTER		PAGE
1	All Good Things...	9
2	Recovery	17
3	One of Our Planets is Missing	29
4	What Wonders Ply The Sky?	41
5	Quick Trip Out and a Look Around	51
6	Surprise!	61
7	At Helium City	73
8	How Do You Find What Isn't There?	83
9	Dying is An Inconvenience	95
10	A New Craft	105
11	Getting There Isn't Half The Fun	115
12	U-Turn To The Truth	123
13	It Jest Ain't Right!	129
14	Yes, We Have No Helium	133
15	New Possibilities	149
16	Back To Helium City	159
17	Expedition	167
18	It's Cold Down There!	177
19	Back From the Shadows	187
20	We Now Return Control...	195

## **AUTHOR'S NOTE:**

Wow. Lucky seven, and a book harking on of the most minor of things to be bothered with by mankind, yet a sadness for many of us. The downgrading of Pluto from “planet” to anything less seems a crime. And to take up valuable time, effort and breathing air fiddling with it seems to be tremendously idiotic!

That said, I set out to write a book about a planet that seemingly was taking revenge on us, and it ended up different. Different from the standpoint that my original outline had the Space Friends’ Masters sending Pluto closer to us as a “thank you” to Earth and Tom Swift for helping to get their minions finally down on our planet, and this gesture goes horribly wrong.

Tom is just barely able to deflect the incoming and now heavily mineral laden Pluto from destroying our planet. Many criticize him believing that if he and his father had never started communicating with the space beings, this would never have happened.

In some small way I kind of wish I *had* written the story like that. But, it would not have been in the vein of Tom Swift stories. It would have been much darker with heavy political overtones. Not, as I surmised, a good book for this fan fiction series meant to honor the idea and ideals of Tom Swift.

But, I might write that story someday as a standalone novel, *not* featuring Tom. Stay tuned.

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# Tom Swift and the Paradox Planet

## FOREWORD

Even before the International Astronomical Union downgraded our ninth planet, Pluto, to the status of a mere “dwarf planet,” Tom Swift already could have told them that.

Having visited several of the other planets, his studies of the bodies in our solar system had indicated that Pluto might not contain enough actual solid rock to keep its qualification. Just too much of it seems to be ice of various compositions.

A lot of this had been put into the backs of people’s minds during the period leading up to this story.

This is just another of the mysteries that astronomers have noticed in recent years. From the Shoemaker-Levy 9 comet collisions into Jupiter to the disappearance then reappearance of the Great Red Spot on that same planet’s surface to the discovery of the tiny, almost unnoticed quasi satellite/asteroid/moon of Cruithne and its wildly fluctuating path around the Earth. And, have you heard about the discovery of a distant galaxy shaped like a boomerang?

So, nothing should be too surprising.

Unless it includes the complete and sudden disappearance of an entire solar body, leaving no trace.

What a curious universe this is in which we live.

*Victor Appleton II*





## CHAPTER 1 /

### ALL GOOD THINGS...

"COLOR ME surprised, Tom," the dark-haired young man standing next to Tom Swift, inventor and scientist, said in a stage whisper. "You actually did it! You and Bash got engaged!"

Four young adults stood on the deck behind the Swift house having pictures taken by a local photographer. Tom turned away from his new fiancé, having just given her a tender kiss, and whispered back, "Take a look next to Bash, Bud. Sandy's eyes are saying that you're next, chum."

Photos finally finished, Tom and Bashalli Prandit turned to face the crowd of over thirty family and friends, Tom could hear his best friend—the man who would be his best man in less than a year—gulp. Squeezing Bashalli's icy fingers, he smiled.

Tom knew that his sister, Sandra Swift—one year his junior and who had been dating Bud Barclay for the past four years—was not only deeply in love with the athlete and pilot, she already had her ideal wedding dress picked out and had placed a sizable deposit on it the year before when Tom and Bashalli hadn't yet discussed anything more serious than a boyfriend/girlfriend arrangement.

Now, here they stood at a party Tom's mother and father, Anne and Damon, were giving them to mark the official announcement of their engagement.

Bashalli and her father, mother and older brother Moshan had moved to Shopton, New York, more than a decade earlier from their native Pakistan. Quickly becoming more Americanized as she entered her teens, Bashalli's parents had held out hope for many years that they might arrange a traditional marriage for her, but realized that she had fallen so deeply in love with the famous, young inventor within the first few months after they had met more than two years earlier, they had readily given her their blessings to marry Tom when he asked for her hand.

And, she and Sandy Swift were so close they were practically sisters within the first few weeks Bashalli and Tom had begun dating. Early on, Sandy had confided in her new friend that they would officially be family someday.

As he and Bashalli walked through the crowd to the smiles and good wishes of everyone gathered in the Swift's spacious back yard, they both noticed the tears of joy in the eyes of both his and her mother.

Squeezing her hand again, he said out of the side of his mouth, "I absolutely love you, Bash, but the first chance I get, I'm going to invent something to unfreeze those your icicle fingers of yours."

She squeezed his hand tightly. "That will not be necessary, Thomas, as I have such a thing already. You!"

"Can we get out of these fancy clothes soon?" he asked her. "You know how I hate wearing a tie and jacket in the summer. I'm about to sweat myself into a coma!"

Although she was very proud of her dress, the one she and Sandy had shopped for and worried over for two full weeks, Bashalli readily accepted the idea that she and Tom should change into more comfortable clothing before the early evening buffet dinner came out.

After what seemed like hours, but had been little more than twenty more minutes, they excused themselves and changed.

By the following Monday, things were mostly back to normal and Tom drove into work with his father. They parted in the Administration parking lot with Damon heading upstairs to the spacious office he and Tom often shared, and Tom heading for a meeting with Dianne Duquesne and her team of propulsion engineers.

"I'm not sure, Tom," she told him after he made a brief presentation about changes he would like to investigate. "That little Y-4 engine of yours is, as I once heard in a movie, 'practically perfect in every way!' Why downsize it by half its displacement when it's already a midget dynamo? You making a go-kart for hamsters?"

"Good question. I probably should have mentioned that we—Swift Enterprises that is—have been approached by a brand new motorcycle company out in California. They want to build a high-performance, very low fuel consumption, hybrid cycle and think that a tiny version of the Y-4 would be perfect for turning the electrical generator they will use as the main power source."

The head of Propulsion Engineering nodded, contemplating what it all might mean. She brightened and asked, "Do you mean they won't be using the engine to actually drive the motorcycle?"

"That's right. It will run entirely on electricity with a trio of our newest low-profile lithium-antimony batteries providing about sixty miles of travel before the engine kicks in and begins charging them while providing enough electricity to continue powering the bike. If we get things right for them, one gallon of gasoline will get a driver more than two hundred ninety miles at freeway speeds."

Dianne turned to her team and posed a few quiet questions. A

minute later she turned back to her young boss. “If you don’t mind, I’d like to try something a bit different. It will be just as small but will have better torque to turn a high-output generator.”

Tom looked at her with curiosity spread across his face. “And?”

“And,” she said giving him a smile, “I think we can name that engine in just six cylinders, not twelve!”

She went on to explain that her thoughts were leaning toward a Y-2 engine, simplifying it greatly while retaining individual cylinder size. Like the original it would be built to resemble an inverted letter “Y” with each of the arms containing—in this case—a two-cylinder set. The idea behind the radical design was that at least one piston would be in it’s ‘power stroke’ at any given time. This meant that no flywheel was necessary to keep the engine turning over, even at slow idle speeds. It also meant that there was always near-full torque—the turning force—coming through the crankshaft.

“Can you give us three weeks?” she asked. “For a working prototype, I mean.”

Tom smiled.

“Ah. I see,” she said. “You were going to give us four, weren’t you?”

Now, Tom blushed slightly. Then, he nodded.

“Actually, I was going to ask if you could get me anything in six weeks. I’ll gladly take it in three!”

By the time Tom left Propulsion and got to the large office he and his father shared, Damon had just returned from a quick meeting at the Swift Construction Company several miles away from Enterprises—the four-mile-square research and invention facility located on the south side of Shopton and near the large body of water that was Lake Carlopa. All to be found in upstate New York, Shopton, it had been the home of many generations of Swifts over the previous century-plus. Enterprises was crisscrossed by eight lengthy runways and taxiways, with a central cluster of building that would fill many city blocks, and it was one of the most widely known companies in the world. The names of both Damon and Tom Swift were recognized at the same high level by the general public as the most famous movie stars and politicians of the day.

And, they were both generally held in higher regard than either of the aforementioned types of people as well!

“Greetings, Son,” his father called out from behind his computer.

“Can Dianne and her folks get going on that little engine project?” Damon had been the one to take the initial request from BlancMoto out in San Jose. He quickly realized that Tom, with his recent successes in small and very powerful gasoline engines, would be the one to handle any possible development. Yet he maintained an avid interest in anything his son might be working on, so he was naturally curious.

“She and they can. They thought I was a little loopy at first until they understood the whole hybrid aspect. Now, it looks like they’ll go like gangbusters on it!”

“That’s good news. Well, now to change the subject, I’ve accepted an invitation on both our behalfs to take part in observing a demonstration of a new low-orbit rocket design the government is looking into.”

“Is this so we can bid on the project?”

Damon shook his head. “Already awarded a few years ago. Things have progressed awfully slow and this first test launch is crucial to the ongoing project.”

Tom was shocked. “Are they asking us to help a competitor?”

“Not really. You see, the rocket design has been under development at a small college in Connecticut for over four years. It’s been a class project for seniors involved in their high-altitude studies program. And, while it has been a learning platform, it is also a full-fledged Government contract and Uncle Sam requests some results. Their junior Congressman, a Representative Theo Emerson, has asked that you and I drop by day after tomorrow to watch preparations and then stay the following day for an early morning launch. One of the students suggested your name.”

He filled Tom in on the few particulars he knew before Tom happily agreed to the trip.

“Of course, your new fiancé may take exception to you leaving her alone for forty-eight hours, you know,” Damon teased Tom. “Perhaps, you ought to ask her permission.” He winked at his son.

When Tom called Bashalli a few minutes later she agreed that she would miss him, but it would be nice for Tom and his father to be together. “Besides. I need to spend some time helping Sandra strategize on getting Budworth to propose.”

Tom contemplated giving his best friend a heads up about that, but grinned to himself and thought, *Who am I to stand in the way of true love, and his discomfort!*

Father and son made the trip to the city of New Haven in one of Swift Enterprises’ Toads—officially known as the SE-11 Commuter,

but given that nickname by Bud Barclay upon seeing the first test version. Two above-wing-mounted jet engines and a squat, underslung cockpit gave it the appearance, from the front, of being a giant amphibian.

They shook hands with the man in charge of the program.

"Very nice to meet the two of you. I'm Daffid Cym Cluyethe and, yes that is a wonderful mouthful of Welsh name. Please call me Dave. And this rag-tag mob is my senior class and the ones responsible for finally getting the design built and ready for this test. I hope we won't let you two down."

"Nonsense, Dave," Damon stated. "If we've learned anything from our many rocket launchings it is that even a failure teaches anybody willing to learn."

"Can we see the rocket, sir?" Tom inquired.

"Absolutely. We have it under wraps in our main storage building at the edge of the campus. Let me introduce you to these people and we'll all head over there." He lowered his voice, "I have the sneaking suspicion that they will all explode if they don't get to show you everything. I hope you don't mind the enthusiasm of unbridled youth."

Damon looked pointedly at Tom, who shrugged. "We want to see everything, if possible," the younger Swift told their host.

After meeting the fourteen students, they all walked across campus and entered an older, metal-framed outbuilding. Once inside, Tom's interest perked up considerably as he saw the gleaming, red rocket nestled in its cradle. He judged it to be about thirty-five feet in length and was similar in design to a rocket the U.S. Air Force used a dozen years earlier. One major change he spotted was the addition of four, triangular fins near the nose cone.

"Can I ask some of you to tell me about those extra fins?"

"I—uh—that is I think I can," a small, pale boy with thick spectacles ventured. "We wanted to add some extra stability at slower speeds. They are static for now..." he paused to see if Tom might wish to say anything. Seeing no reaction, the boy continued. "We, or rather Tracie over there," and he pointed to a petite red-haired girl in short cutoffs, "she ran the computations and it looks like they will do the trick."

"Hmmm," Tom muttered. He knew from experience that anything placed ahead of the center of gravity—the point where a rocket will either fly straight or want to spin around if too much weight or dynamic forces is located—could spell doom for the rocket. "I'd like to see those computations if I could."

Dave looked over his glasses at the young girl. "Tracie? Can you be trusted to behave yourself and just show Tom here the computer simulations? Hmmm?"

With a slightly exasperated sigh, the redhead came forward. "Yes, Mr. Clu. I promise to behave." She turned to face Tom. "Can you come with me? I've got the computer locked up in the other room so none of them fiddle with it." He voice had the low, modulated tone of a newsreader.

With a glance at his father, who smiled at his son's evident discomfort, Tom and Tracie went to the other side of a locked partition and into a small office.

"Mr. Clu thinks that I'm all ga-ga over having you here, Tom, just because I suggested your name" she told him as they sat down. "I was, last year, when you spoke at my sister's high school graduation, but I'm mostly over that. I mean, over you... I think."

"Well, I'm glad of that—er, I mean I'm glad we won't have any misunderstandings, that is," Tom told her. "I just got engaged and I'm not certain if I could take being made ga-ga over." He wanted to add, *By a very cute girl like you*, but he held his tongue.

As she called up the first of the computer calculations, she told Tom, "My step-father used to work for you, you know. He was part of the Outpost in Space project before he decided to retire and go into being a security guard. Less stress, I guess."

"Oh," Tom said. "What was his name? I knew a lot of the men on that project."

"Duane Robinson," she said after a slight hesitation. "He used to tell us all about the work getting the rockets up and fueled. It's what got me interested in this project, even though my real field of study is applied mathematics."

Tom believed he knew each and every man and woman on the Outpost project. The name, Duane Robinson, just didn't ring a bell. He made a mental note to ask his father that evening.

After looking through her computations, he asked to view one of the simulation launches. As he suspected, although minute, there was a small wobble introduced into the flight which he felt was attributable to the extra fins. He pointed it out to her.

Dismissing his concern, Tracie told him, "That was before we moved the fins back about three inches. Every sim we ran after that was rock steady."

By the time they returned to the rest of the group, Damon was peering inside the now open nose cone looking at the maze of wires and circuit boards that made up the flight controls.

"An impressive setup, Tom. Take a look," his father prompted him.

Tom, too, was impressed. Everything, although crammed into a tight space, was well organized, labeled and color-coded.

"Very nice. A great job, folks!" he complimented the group.

They all spent the next hour checking various components. Only a single fuse on an auxiliary circuit board showed anything less than perfect condition. It was quickly replaced and tested.

As they took their leave later that afternoon, both Swifts reiterated how impressed they were with the quality of work evident on the rocket.

Tom and Damon sat in the restaurant next door to their hotel two hours later sharing orders of stuffed clams and crab cakes. Tom brought up his continuing concern over the forward fins.

"I spotted that as well," his father commented, "but we'll just have to let them find out if they work, or not."

"Oh, I almost forgot. That redhead, Tracie, was telling me that her father worked on our Outpost project. Duane Robinson. The name didn't mean anything to me, but I thought you might remember him."

Mr. Swift thought a moment. "Right. I do remember the name. Came to us as an astronaut candidate but couldn't pass Doc Simpson's physical. As I recall, he was a bit too fond of the wine, as we use to say. His blood work came back, at least twice, with traces of alcohol. I'm almost certain that a retest a week later showed he was still drinking. A pity, really. We gave him a second chance working as part of the construction crew out on Loonau. He didn't last too long as I recall. Same issue. Late to work too many days after too many drinks the night before. Harlan let him go before we were more than about half finished with building the space port."

Tom frowned. "I'm pretty sure he never told his family. His stepdaughter thinks that he retired to get away from the stress."

Damon made a note in his ever-present pocket organizer to call Enterprises Security the following day to bring up the subject with Harlan Ames. "Now that you mention his name, I'm having a memory of something happening back then, but I can't put my finger on it," he told Tom.

At five a.m. the following morning, the two inventors arrived at the site of the proposed launch, a large cleared field near the coast, east of New Haven.

"Great morning for it," Dave greeted them. "All we have to do is pump a little more caffeine into this mob and we'll get things ready

for a 7:20 to 7:40 launch window.”

As with any launch sending rockets above a few thousand feet, and especially ones destined for near space or even orbit, the FAA and other organizations had to be notified well in advance, and a specific launch window was assigned. Miss your window, even by a few seconds, and you were forced to wait until the next window opened. That could be days or weeks later.

“What is your fallback window?” Damon asked.

Consulting a clipboard for a minute, Dave finally answered, “We have two short-term alternates. 3:45 to 4:07 today, 9:11 to 9:35 tomorrow morning and another early window like today’s in two weeks from Thursday. We don’t want to wait for that one,” he explained.

“Why not?” Tom asked sounding more concerned than he really was.

Dave took a deep breath and let out a sigh. He motioned both Swifts to follow him to one side, away from the students. “Truthfully, if we can’t get this up today or tomorrow, we will lose our funding. Everything will have been for nothing. Our Federal funds will be withdrawn. I don’t want that happening to these kids.”

Preparations went well over the next hour with the three sections of the rocket being assembled, checked and raised on its launching rails before 6:50. A final round of checking and verifying that all the electrical and electronic systems were in working order filled the next twenty minutes.

Finally, a call was made to the FAA to notify them that the launch was go. They received a five-minute hold as the final radio warning was broadcast, but were given the 'okay' just a few minutes later.

"Here goes," Dave said and the group held their breaths while he gave a countdown starting at "Five..."

With a rumble and a whoosh, the rocket first lumbered and then shot into the sky. As the readout from the onboard instruments showed it passing 2,400 feet, a warning light flashed.

"She's off balance!" yelled the boy manning that station.

“How bad?” Dave asked.

“I show her with a five degree tilt. No, wait. It’s moving back and forth. Now it’s six... seven...!”

Calmly, Professor Daffid Cym Cluyethe said, "Stand by to activate destruct. Wait for my command—NOW!"



## CHAPTER 2 /

### RECOVERY

THE BLINDING explosion everyone expected failed to light up the early morning sky.

“Again,” the professor ordered in a level voice still looking skyward but jabbing his finger in the direction of the boy at the control board. “Come on, Rob. Reset and hit the button again!”

The young man, easily a year older than Tom but considerably less able to handle stressful situations, was forlornly looking at his board. Although he jabbed at several buttons, nothing he did made a noticeable impact.

Tom stepped forward quickly, scanned the board and reached out. He pressed the **RESET** button, clearly marked but undetected by Rob, and then pressed the **DESTRUCT** button.

He looked up to where the smoke trail from the errant rocket gave ample proof of its erratic course. Twisting and turning back on itself, the only positive thing Tom could detect was that it still appeared to be heading away from land.

A second later, the rocket broke apart sending smoke, flames and debris out in an expanding cloud. The *boom* reached them a few seconds later.

“Got it!” exclaimed the college professor. “Thanks, Tom.” He glared at Rob who still sitting at the board, seemingly frozen but who was now slightly trembling.

“Actually, Dave,” Tom corrected him, “what I did made no difference. It destructed all on its own. Unless you built in a three-second delay, it didn’t respond to my signal. I’m pretty sure that nothing Rob could have done would have made any difference.”

Prof. Cluyethe looked from Tom to Rob and then to his other students. He appeared to be considering something with eyes narrowed, but soon softened his features and pulled out a small notebook. With a sigh, he asked, “Who was on the team responsible for the destruct mechanism?”

Two reluctant hands were raised.

“Okay. Let’s go over everything you did today. Rob, you first.”

The student gulped but then, after receiving a reassuring look from Tom, started detailing every step he had taken—including the checks performed by his partner—regarding the installation of the destruct charge and how and when it was armed.

The other boy concurred on all aspects of the process. “The final thing we did was to arm the control board. I saw the green LED and everything inside before we closed the capsule.”

“Okay. Let’s pack up and get back to the college. I’ll try to get a boat and we’ll go out to see if there is anything to recover. You all get started while I notify the FAA.” The professor let out a very heavy sigh.

Tom and Damon assisted the students, many still in shock over the failure of their rocket, to gather all the controls, lower and disassemble the launcher and pick up a few pieces of trash they had dropped.

As they were driving back to the college Tom offered to assist in the recovery. “I can fly down to our private island off of the southern coast and be back tomorrow with one of my jetmarine subs. I can do a much better search from under the waves than you might from above.”

It was agreed, and Tom and Damon flew back to Enterprises as soon as they retrieved their luggage and their host drove them to the airport.

By the time he returned, accompanied by Bud and another Enterprises employee, Zimby Cox, more was known about the failure to destruct the rocket.

“We had a failure in the circuitry for the destruct controls. The board checked out and worked perfectly as far as we can tell. It was a small fuse in the actual transmitter.”

“Had it been tested before the explosives were armed?” Bud asked. Tom had filled his friend in on everything that had happened.

“Yeah, and it lasted just long enough to give us a positive test result. We’re pretty certain it blew just as the destruct sequence was keyed in and was sent for broadcast. Of all the rotten luck!”

“You know, Dave,” Tom wanted to remind the man, “the rocket was on its way to total failure regardless of the destruct mechanism.”

Dave nodded, sadly. “Right. Can’t argue that one. I’ve seen the telemetry. Pretty gruesome wobble. I don’t suppose you have any insights that we might use to fix things for next year’s class attempt? If,” he added rather morosely, “I can convince our Funding Fathers to give us more money... and time.”

Tom brought up the issue he and his father had anticipated with the front fins. It wasn’t the actual fact of the fins being there, he wanted the professor to understand, rather it was a matter of

position, size and even utility.

“You see, in military and NASA rockets that have such fins, they are control surfaces capable of being directed in reaction to minute attitude changes that are sent from a guidance computer. You seemed to have most of it right, but those fins need to be steerable, and you could use more computing power. If you would allow me, I have a small computer back at Enterprises I can let you have—a donation to the school—that could be used to provide such rapid data crunching and proper fin control. That plus four quick-reacting servos and a couple of gyroscopes to provide the data...”

He left the rest unsaid. Dave Cluyethe had a look of intense relief and gratitude on his face.

The professor was unable to accompany them but requested that two of his students be allowed to join in on the search.

“We have some triangulation data about the probable area most of the rocket splashed down in, Tom,” Tracie Robinson told him. She had volunteered immediately when it had been announced that Tom was coming back with his submarine. “I’ve got it all marked down on a Coast Guard chart I picked up at the marina this morning.”

The other student, a rather sullen man of twenty-eight—a returning soldier who had been wounded in action and forced into early medical retirement—named Jack Sawyer, did not seem as anxious to make an impression on Tom.

One late addition to the rocket’s instrument package had been the installation of a small transponder. Originally designed for use by hikers, it was able to send out a signal giving the GPS coordinates of its location every three minutes.

“It is fairly weak even at the best of times,” Jack told them all. “Doubtful that we’ll pick it up unless we are right on top of it. At least, in the water,” he murmured. “And, unless it got blown up.”

“Well, let’s get out there and see what we can find. Our instruments are pretty sophisticated. I think you might be surprised. In fact, I might as well tell you that we detected an intermittent beeper as we came close to shore on the trip up. I didn’t think anything of it at the time. There are some sophisticated lobster and crab pots that now have beacons. Looks like that may be our best starting point.”

While Bud took the helm and Zimby got into a conversation with Jack, Tom and Tracie spread out her chart. Pointing at a location she had circled in red pencil, she said, “From information we got from the Coast Guard tracking station near New London, and from what I, or rather, we all observed, I think it has to be

somewhere about there.” She stabbed a finger down onto the chart.

Tom took a look at his logbook. He had noted their location earlier that day and the bearing of the faint signal. Placing a point at the jetmarine’s location and drawing a line out on the bearing, Tom stepped back.

“Well,” he said, seeing that the line brushed the eastern-most part of the girl’s circle, “we may have something.” He called out a course to Bud and soon the small sub was scooting along just three fathoms below the waves.

Fifteen minutes later, Zimby, who was manning the sonar-phones and radio detection equipment shouted, “Got it!” He consulted his readouts. “Bud. Turn port another fifteen degrees and stop us about eleven hundred yards farther ahead.

Once at the indicated point, Zimby turned the speakers on so that everyone could hear.

“Is that the signal?” Bud asked.

Jack brightened. “Yeah. It sounds like it.”

“What is the broadcast frequency?”

“Uh, I think it’s one of the 406 Megahertz beacons,” the ex-Army man replied. “Does that sound right to you, Tracie?”

She looked embarrassed. “That was another of Rob’s areas. I should have thought to ask. I’m sorry.”

“Nothing to be sorry for,” Tom said trying to be supportive, only not *too* supportive. The girl had been standing right next to Tom the entire trip. A bit too close for Tom’s comfort, and it had become a quiet source of amusement for Bud.

“I’ll take Jack’s suggestion. Does that match the signal you’re getting, Zim?”

“Give or take a quarter Megahertz. It’s almost directly ahead, maybe another three hundred yards now and at a down angle from us of seventy degrees. That would make its depth about—” he did a quick mental calculation, “—ninety-seven feet. What’s the chart say about the bottom, skipper?”

Tom’s finger touched the location. “Sixteen fathoms. Ninety-six feet. I think we might have your rocket capsule down there.”

As they inched closer to the floor of the outer bay, Tom and Bud went to the storage locker that doubled as an airlock and climbed into their Hydrolung suits. These flexible, full-body suits featured a propulsion unit to let them shoot through the water at anything from a snail’s pace up to fifty knots, plus a device that extracted oxygen and other gasses from the surrounding water and allowed

them to breath without the need for bulky SCUBA tanks.

“I used to do a bit of SCUBA diving,” Jack said. “Don’t suppose I could come along?”

“I’m sorry, Jack. We only carry two suits in this model jetmarine. Bud and I will go out first. If we find that the debris is too scattered—I’d really like to get as much of it recovered as possible to keep the toxic chemicals from your solid rocket engine from doing any harm—then we’ll need to spell each other off. You can have a go the second dive. Okay?”

The man nodded, but Tom could sense that he was not happy to be left in the submarine with the girl.

The upper seven feet of the rocket was intact and easily spotted sitting in the silt. Even at this depth there was ample light from the sun now positioned directly overhead.

The two friends attached nylon lines to the rocket and used their propulsion units to pull it out of the muck. Twenty minutes after exiting the jetmarine, they returned with their bounty.

“Let’s get it pushed back inside and then take a little scout around while Zim and Jack and Tracie get it out and wiped down,” Tom called out to Bud.

Over the next three hours, each of the males made several dives to recover some more of the rocket. Tracie had a fear of water, something she had seemingly overcome well while standing close to Tom, but appeared to manifest itself in a small panic attack during his and Bud’s first dive.

Examining everything they had sitting on the deck of the sub, Tom believed they had recovered all the larger parts, perhaps the entire solid rocket motor casing from the first stage, and the practically intact second stage motor. The rest of the second stage had been retrieved in five pieces minus the recovery parachute. Only two of the aft and one forward fins remained missing as was the milled metal rocket nozzle for the first stage.

They headed back to shore. Two hours later everything was off-loaded and placed in the college’s van.

“Keep me advised about anything you find,” Tom requested as he and Bud prepared to leave that evening.

“That Tracie girl is kinda sweet on you, you old nearly-married man,” Bud teased his friend as the jetmarine headed out to sea.

Tom blushed. “For heaven’s sake, don’t tell Bash.”

Bud gave him a little, smirky smile. “Yeah. Okay. Maybe,” he said, noncommittally.

“I’ll make you little deal,” Tom told him. “You don’t ever tell Bash about her and I won’t mention to Sandy how you’re just about this close—” he held up two fingers spaced only a millimeter apart, “—to proposing to her!”

Bud sputtered in protest for a few seconds and then stopped. He knew when he was beaten. “Deal! Hey, listen... about Sandy. Now that you and Bash are going to get married, do you think she really expects the same thing from me?”

“Oh, brother. Or should I say oh, soon-to-be brother-in-law. If you don’t know how seriously Sandy plans to be Mrs. Budworth Barclay then you are *really* blind, deaf and dumb. And I mean stupid dumb!”

Bud knew. He had known that he and Sandy would be together from about three days after he first met her, when she was only fifteen and he was sixteen. The mutual attraction was immediate and so obvious that Damon Swift and his wife, Anne had both sat in their living room only a week after that first meeting and discussed the possibilities.

“We don’t know much about the boy,” Damon said, “but I can tell that we appear to have one very nice young man who is worshipping our daughter.”

Anne Swift had only sighed. She well remembered the feeling of young love and only hoped that the relationship would take a slow and steady path. They both knew how impetuous Sandy could be at times.

Bud turned to Tom and told him, “I know all about the inevitable, skipper. I was hoping to avoid it for a few more years, but I have seen the writing on the wall.”

The two best friends smiled at each other as the little jetmarine headed back to its home port on Fearing Island.

A few days later, Damon Swift received a call from David Cluyethe. “Mr. Swift? I’m hoping to get another favor out of you. We have thoroughly dissected the rocket pieces and especially the internal tracking circuitry. The software was an off-the-shelf package and we are, frankly, having a dickens of a time deciphering things. Might it be possible for you to come up and give us your expert advice?”

“Well, Professor, I’m afraid that a pair of project I’m involved in with the Government will keep me too busy to be of any assistance to you for at least the next five weeks or so. I’d be happy to ask my son if he could help.”

The professor agreed that Tom would be more than sufficient. After hanging up, Mr. Swift called to his son using the TeleVoc

communicator all Swift employees wore under their shirt collars.

“Sure, Dad. I’d be happy to go back. Can it wait until day after tomorrow? I’m trying to make some refinements to my deep ocean Radetector. Admiral Hopkins called yesterday to say that he thinks there may be more nuclear waste buried under the North Pole that we never found when we pulled up those old Soviet subs.”

Months earlier, Tom and Bud had been involved in a deep sea rescue operation of one of the country’s newest nuclear submarines. After successfully rescuing the crew and raising that sub, the U.S. Navy had contracted Enterprises to locate seven other known nuclear subs that had gone down under mysterious circumstances, taking their crews and the facts of their demise with them.

What Tom had found were those subs plus a surprise graveyard of almost twenty other Soviet-era subs that had been dumped under the Arctic polar icecap. Many contained leaking nuclear weapons and all had their reactors, still fueled, inside their rusting and damaged hulls.

“Certainly, Son,” his father told him. “If you have a moment, can you let the professor know when you might be able to see him and his team?”

Tom agreed to make the call immediately. The professor was relieved.

“You can’t imagine how anxious we all are to find out what really went wrong.” He thanked Tom and offered to have a car waiting for the inventor upon his arrival.

Bud poked his head inside of Tom’s underground hangar that afternoon. “What’s happening, skipper? I hear tell from your dad that you’re heading back to New Haven. Hot date with that little redhead?”

“Bud!” Tom warned, turning red and then blanching, “I thought we agreed that I don’t pester you about Sandy and you lay off the—”

“Sorry, Tom. Force of habit. Anyway, want a sidekick to come along?”

“Just as long as it’s you,” Tom told him.

Bud nodded enthusiastically. “Count me in. Meet you at The Barn. What time?”

They agreed on a 7:00 a.m. departure so they would meet at 6:40 two mornings later.

Tom spent the remainder of the day and all the following one working on his Radetector refinements. Lunch arrived courtesy of Chow Winkler that next day.

“Saddle up that stool, youngin’,” the roly-poly cook ordered good-naturedly. “Got’cha some fine san’wiches and a cup o’ my rightly famous Texas chili. Dig in!”

Tom moved from his workbench over to the tall table in one corner of the lab. As Chow served the food, Tom sat pondering his work. He was so distracted that he failed to notice Chow’s latest western shirt. This one was bright red with almost neon green cacti and a lone steer looking at a bright yellow sun.

“What’s on yer mind, Son,” the cook asked kindly. Chow, who had first met the young inventor in New Mexico when Tom accompanied his father out to the Citadel, the Swift’s nuclear research facility. The then sixteen-year-old and the older ranch cook had hit it off immediately, and Chow had asked to be allowed to pull up stakes and head out to Shopton to work for Damon and Tom when they returned home.

Tom thought how best to tell Chow what he was working on. He knew that the older man was not scientifically-minded, but Chow had proven to be capable of pointing out obvious things that may have been missed by others, if the information and questions were put to him just so.

“You remember our voyages under the oceans and the North Polar Cap, bringing up those old subs?”

The cook nodded. “Sure. An’ I remember them nasty galoots in that rickety old sub and hows they tried to kill us. Miserable hombres!”

Tom had to laugh. “Well, the Government thinks we may have missed some buried subs up there. Maybe filled with old weapons. Nobody knows. They believe whoever towed the ones we found may have also buried a half dozen or more under tons of rock and dirt. Now, I need to figure a way to detect them, if they exist.”

“You can’t jes’ turn up the power on your detection doohickey?”

“I actually thought of that, but we were running it at maximum settings and maximum sensitivity. If I knew more about what they might be buried under I could come up with a way to detect both that and the possibly accumulations of even fewer radioactive particles than before. Then, if I could filter out the rock signatures we know about...” He tailed off seeing that Chow was now in over his head information-wise. “I’m stumped.”

Chow removed his ever-present 10-gallon had and scratched his bald head. “Kin I take a load off fer a minute?” he asked.

Tom motioned to the stool across the table.

“Well, now. The way I figger it, you’ve got yer new gadget to find



the ray-dee-o-activity in the water, and you have an old gadget for finding ray-dee-o-active rocks and things under even more rocks and things. Right?”

“Uh—” Tom began before it occurred to him what the cook meant. “The DamonScope! I never thought to combine the two. I never considered that we might know the general area just not specific location of something buried. Along with the sample scans for specific isotopes, I could do a deeper non-specific scan for any radiation! How could I have missed that?”

The chef beamed. He was rightly proud whenever he could be of assistance to his young boss.

“Take it from me, Son,” he told Tom. “You got so much stuff going on in yer head that yer bound to forget some o’ it!” With that, Chow slid off the stool and went out the door pushing his food cart down the hall.

Tom resolved to look into Chow’s suggestion immediately on his return from the trip to New Haven.

He told Bud about Chow’s idea on the way to Connecticut the next morning.

“One thing you can say about Chow,” Bud philosophized, “is that he is proof about the old ‘out of the mouth of—uh, I was going to say ‘babes’ but he’s anything *but* that!”

The waiting car was driven by Tracie Robinson. She suggested that Tom ride up front with her, but Bud called “Shot gun,” and hopped into the seat as soon as they reached the car. Although she seemed annoyed, she said nothing and the trip to the school went quickly, if silently.

At the college, they went straight to the lab and construction building where the rocket pieces had been mostly reassembled. Someone had built a wood framework into which all the parts had been wired together. The entire class was present with the exception of Jack Sawyer. It was explained that he had dropped out of the course the day following the disaster and had even left the campus. Nobody knew where he was.

Three of the students showed the inventor the on-screen raw data stream while Bud joined the rest in looking over the rocket pieces.

It took Tom about an hour to decipher all the data and to divide it out into the proper categories. Evidently, the school had purchased the recording software but had not paid for the processing and reporting package. All they could view were waveforms and digital data. Once he knew what he was looking at, Tom wrote a quick and dirty program to give them all some idea of

what the captured data might tell them.

What he discovered was a shock to all of them. The data clearly showed that a second signal had been continuously received by the computer starting five minutes before the launch. It conflicted with—and even countermanded—the internal guidance programming.

“I’ve got to believe *that’s* the source of your problem. Not the forward fins after all,” he admitted looking at Tracie. She nodded to him in silent acceptance of his implied apology.

“Hey, Tom,” Bud called out. He had been hovering around the remnants of the rocket guidance system trying to see if anything looked familiar. “What’s this?” He was pointing at a small “daughter” card attached to the underside of the main circuit board.

“That’s just the memory,” Rob, the control board operator told him. “Just the bank of memory chips.” The group started to turn back to the computer.

But, Bud was not to be deterred from his discovery. “Tell me if I’m wrong, but doesn’t memory come in groups of *eight* chips?”

Tom nodded. “Yes. Or, at least multiples of eight. Why?”

Bud pointed back at the card. “Because this one has nine chips on one side and eight on the other!”

Everyone raced forward. Tracie tried to take the board from Bud’s hands but he pulled it back and handed it to Tom. Tracie was visibly bothered.

“Do you have the original paperwork from this board?” Tom inquired.

“Sure,” Professor Cluyethe told him. “We keep everything.”

The paperwork, including basic schematic, was soon produced. As Tom suspected, the illustration showed only eight chips on each side of the board.

“This is a phony board,” Tom told the shocked group. “Look.” He showed them that the chips on the top side of the board were actually memory chips of twice the capacity as they were supposed to be while the chips on the bottom were close in appearance but not exact matches for memory chips.

“My guess is that someone substituted this board for your real board. It would register the right amount of memory but seems to be a self-contained computer. Assuming this is the source of our second data input, the rocket would do whatever the second chipset is programmed for.”

“But, Mr. Clu,” one of the students remarked. “That would mean

we've been sabotaged!"

"It must have been Jack!" stated Tracie. "He's been trouble since the day he joined the team! And, now, he's disappeared."

As the group suddenly went into discussion overdrive, Tom's cell phone rang. It was a special musical tone that he knew meant a call from his father, and an important one at that. He answered the call, stepping away from the group.

"Tom!" Damon exclaimed. His voice was as steady as a rock, but Tom could hear the excitement and tension in it. "You have to come back right now. *Pluto has disappeared!*"



## CHAPTER 3 /

### ONE OF OUR PLANETS IS MISSING

TOM WAS speechless. All he could think was that he either had heard his father's words incorrectly, or that a terrific joke was being played on him. He quickly discounted the latter idea.

"Who's saying that?" he asked.

"Our own observatory in the Outpost, Tom. They were performing the daily Megascopé sweep and had been scanning the skies for anything that might be incoming. When they calibrated it to point at Pluto, they found nothing."

"Do we have any verification? I mean, have any of the Earthbound observatories or the orbiting space telescopes had the chance to look?"

Damon told his son that at least five sources had confirmed the fact. The planet—or as it had been downgraded years earlier the minor planetary body—of Pluto was indeed missing.

"Have our people do another detailed sweep of the area, Dad. If something's hit Pluto, there will be debris. And, if it was hit, we have to be extra vigilant. We're both on the same side of the sun right now. Something could be coming our way." Before hanging up, Tom promised to head back to Enterprises within the hour.

The rocketry team had worked themselves up into an angry mob, arguing over even insignificant details and personality conflicts. Bud, wisely, had stepped back and was not participating. Even their instructor was theorizing about what the ex-Army man might have done.

Clearing his throat in a manner that generally got people's attention, Tom said, "We have to leave." The group immediately stopped talking.

"But, you have to help us," Tracie Robinson almost ordered.

"No. I have a much larger problem right now. You will hear about this on tonight's news so I might as well tell you." He went over the basic information about the missing planet. They were all shocked and nobody could find any words to say.

"We'll get you back to the airport, Tom," Dave Cluyethe said. "Our little problem is nothing compared to what you are about to get onto."

"Actually, sir," Tom replied. "I was going to offer you some ongoing assistance. While you can probably do some investigating

on your own, I have a top-notch security team headed by an ex-Secret Service man. I'd like to offer their help in figuring this sabotage out." Tom could see that the professor was about to refuse the assistance. "For starters, they can take this board apart and figure out exactly what it was doing. They might even luck out and find a fingerprint on the underside of one of the chips. We've had that happen before. Plus, they are about the best when it comes to finding missing people. Like your Mr. Sawyer."

The professor relented. He knew that it would be beyond their capabilities. Besides, as he told Tom and Bud as he drove them to the airport, "I'll have more on my plate just trying to salvage this program than I can handle. Thank you for your offer. I accept."

Bud said, "Be sure to tell the folks at whatever government agencies you report to the Enterprises team in working with you. That may get you a little more time."

When they landed at Enterprises, Tom let Bud return their jet to its hangar while he headed directly to his office.

"Your father is on the phone with several panicked people from Washington and London. I'd tip-toe in if I were you," their secretary, Munford Trent, suggested with a knowing look at Tom.

The young man entered the office and moved slowly toward his father's large desk. Damon motioned for Tom to take a seat as he continued into the phone, "As I said, it is far too soon to tell, gentlemen. We just discovered it missing four hours ago and received corroboration two hours after that from the Keck Observatory. Their early morning shift. Nobody knows where it has gone and there is nothing you can do or shout about or threaten that will give us any answers any sooner. Now, if you have any constructive comments or suggestions, I would love to hear them. Otherwise..."

There was a cacophony of voices coming through the speakerphone as everyone strove to talk first and loudest. Damon sighed and put the microphone on mute. Looking at his son, he said, "They always seem to think we have immediate answers." They shared a grin.

"What can you tell us, Swift? Did your supposed space friends hijack our planet? What are you doing to get Pluto back, Swift?"

Opening the microphone back up, Damon raised his voice and said, "If I can get a word in, please! If not, I hang up now!" The clamor diminished to a din and disappeared to silence within seconds. "Why do you immediately turn to us with accusations and blame and then expect answers even before the situation has been properly investigated?" He stabbed a finger back down, cutting his mic as everyone started speaking again.

Tom smiled and shrugged. “Our fault for being the best at getting into space, and knowing beings in high places I guess.”

The voices on the phone were winding down. Damon undid the mute again. “Okay. If everyone will stop talking right now, I’ll go over this all again. Then, I will hang up and you can all go about coming up with anything of a constructive nature *on your own*. Abuse toward me or Swift Enterprises is definitely not constructive. Here is what we know.”

He looked at his son, rolled his eyes, and shook his head.

“Four hours and, let’s see... twelve minutes ago I received a radio call from our Outpost in Space. An hour previous to that, and as part of our daily sweep of the solar system, our long-range Megascope scanned each of the planets starting with Mercury and moving outwards. At this point in time, the planetary orbit of Pluto puts it outside of the orbit of Neptune, something that is only the case for about half of Pluto’s two hundred forty eight year circuit around the Sun. We are also nearly aligned on the same side of our orbital paths around the Sun. After verifying that everything looked fine with Neptune, the space prober was moved to the position of Pluto—”

“Aye, and it weren’t there. Yes we know all that!” interrupted a gravely voice with a distinctive, northern England accent that Tom placed somewhere in the Yorkshire part of that nation.

“Shut up, Newhirst!” commanded an American accent. “Either let Mr. Swift continue or get off the line!”

Amid grumbling, Damon continued. “While we have no idea what happened to the planet, we absolutely know that it was there twenty-four hours earlier—from our daily scan at that time—and it is nowhere to be found now. We have swept the area for about fifty million miles around the location where it is supposed to be, even scanning by at least that much inside its normal orbit and again out away from its orbit. Nothing.”

He stopped and waited, expecting another round of shouting and arguing, but ten seconds passed and there was nothing said.

“So, both the Parkes and the Learmonth Solar Observatories in Australia have moved their area of focus out there and have found, as of five minutes before you called, nothing. The same goes for the Keck in Hawaii—although they are about to have sunrise and will not be able to give us anything solid again until at least fifteen hours from now. Plus, we have the full cooperation of the National Observatory of Japan and will be getting readings from the Royal Observatory in your own England, Doctor Newhirst, as well as the SAO in Russia and the Osservatorio Astrofisico in Italy as soon as they go into their nights, respectively.”

The American voice that had previously chided Dr. Newhirst was evidently in charge, as he now spoke for the group. “Mr. Swift. Thank you for your information and insight. I realize that we hit you pretty hard. I apologize for my colleagues’ tone. We are all being pressured by our governments and agencies to come up with immediate answers.”

Damon agreed to keep them all advised—even to the point of offering hourly email updates to keep everyone informed.

After hanging up, he looked at Tom. “George Dilling is going to have his hands full with this,” he stated, prophetically. He picked the receiver up and dialed.

“I’ll coordinate with all the observatories, Damon,” the communications man promised. “I’ve already been in contact from our Florida Keys and California broadcasters. They are trying to set up impromptu networks of amateur astronomers on both coasts to give us even more input. I’ll keep you in the loop.”

With that, the connection went dead.

“Should I get ready to head out there?” Tom asked.

“Not just yet,” Damon cautioned. “We don’t know what we are facing. This might be another one of our space friends’ doings. After all, they moved Nestria and the so-called captive planetoid into orbit. And, very quickly as well. I just don’t have a clue what they might be up to if they *are* behind this.”

“We should contact them,” Tom said.

They sat down at Damon’s computer and composed a message that would be beamed out as soon as it could be fully crafted.

Just a couple months before, Tom had finally figured out one of the final stumbling blocks in their communications with the alien beings who had first made their presence known a few years earlier when a mysterious rocket of unknown origin had plunged through the atmosphere and buried itself in the grounds of Enterprises.

Covered with what appeared to be mathematical symbols, and other symbols apparently representing objects such as the sun and the planets Earth and Mars, they had slowly translated it and developed a dictionary. Paper-based at first, it had later been automated and computerized. But the final problem, that of changing message meaning based on the order the symbols were presented—even the general orientation of symbols on the screen—had been overcome when Tom discovered a similarity in word/symbol order to that of a long-dead South American tribe’s own language.

With that extra information, communication became almost



immediate as well as considerably more accurate.

It still required careful crafting, but outgoing and incoming messages now took a few minutes to complete, rather than hours or days or weeks as had been the previous case.

Tom typed as his father observed and commented. In the end, the message was sent out as:

**Swifts to Space Friends. Ninth planetary body of this solar system is not visible or detectable by Earth means. We need to know if you have insight on this. We need to know if you have taken steps to move planetary body we call Pluto.**

**Governments on Earth are greatly bothered by this disappearance. If you have not moved Pluto, do you have any information or belief what might have occurred?**

Typically, it required just a few minutes for such messages to reach out to their friends who kept an orbiting space station of some sort near the planet Mars. In spite of the physics involved which would indicate a time lag ranging from about three minutes when the planets were at their nearest point, and up to more than twenty minutes when the two planets were on opposite sides of the sun, the space friends seemed to be able to detect signals in mere seconds.

Both Tom and Damon secretly believed that an undetectable radio gateway must be in orbit around the Earth to make this possible. This was a belief they had never shared with anyone outside of the Swift organization. They knew that any such admission could cause a race between nations to try to locate and take such a satellite. For good or evil purposes.

And, the Swifts knew that the result would not be good for anyone.

Today, Tom noted, the two planets were about one hundred million miles apart, and that should have meant eight minutes

transmission time for standard communications.

In recent months, they had been answering messages from Tom or Damon within minutes. So, Tom and his father waited. Three minutes went by. Then, five. Ten. When fifteen minutes had gone by, Damon remarked, “We might as well get back to work. The computer will notify us when something comes through.”

But, nothing came through before they left work that evening. Damon set up an auto-notify program that would send any incoming message to his cell phone. It, too, registered nothing that evening.

By morning, Tom was ready to send the message out again.

“Do you think we goofed on the wording?”

“No,” Damon said. “I think this is an indication that they didn’t do this and are looking into it. Let’s give them a full twenty-four hours. If we don’t receive anything by then, we’ll try again.”

It was just an hour later when the older inventor’s computer chimed, indicating the receipt of a message. Tom jumped up from his desk where he had gone back to working on the modification to his Radetector, taking the suggestion from Chow and adding a variant of DamonScope functionality.

“Here it is,” Damon told him.

**Space Friends to Swifts. Greetings.**

**We note the removal of your planetary body nine from standard orbit. We have taken no action to cause this.**

**We still look into disappearance.**

**Believe source of removal to be extra-system. Will advise at later date.**

**End greetings.**

Both inventors sat in silence until Damon spoke up. “Well. There goes that notion. I was actually hoping that they had taken it for a quick clean and polish job and would have it back by a week from Tuesday!” He smiled, a bit ruefully, at his son.

Tom nodded. “Yeah, I was hoping it would be something like that, too. What do we do now?”

Damon rubbed his chin in thought. It was a habit he shared with his son. When either man was deep in consideration they tended to rub their chins, much to the amusement of Anne Swift who had first noticed it in Damon shortly after they began dating. Tom had picked it up by the age of eight.

“Well, Son, my guess is that we need to send a probe out that direction. We don’t have anything fast enough in inventory, but do you think you could make something like you used to speed the rocket you sent to our space friends a few months back? The one that was just about all repelatron drive?”

Tom had needed to get equipment to their friends in anticipation of a visit to Earth, and had built a two-stage rocket for the purpose. The first stage was a traditional liquid fueled rocket capable of launching the vehicle and getting it up to several thousand miles per hour and many miles into the upper atmosphere. At separation, the second stage, one packed with high-capacity batteries and a single repelatron, kicked in sending the probe out past the moon in just a matter of a less than one hour under constant acceleration.

“I guess that I could build something larger than that probe and even power it using solar collectors. Theoretically, we could reach one-quarter light speed in about five days as long as we don’t need to accommodate anything alive. That would be the top achievable speed.” He paused, tilted his head a little and added, “It’s going to be fairly costly. A couple million at least!”

“You design it, get it built post haste, and I’ll worry about the funding.”

Tom smiled at his father again and returned to his desk. Within minutes he was deep into studying his computer screen.

An hour later he was pulled out of his concentration by a call from his Security manager.

“Hey, Tom. It’s Harlan. Got a sec?”

Tom said he had plenty of time. “What’s up?”

“Well, once we got the call from you regarding the professor and his group of student rocketeers, I first sent a team up there headed by Phil Radnor.” Tom knew that Phil was the second-in-command of Security for all Swift holdings. Although slightly pudgy, and extremely powerful in a very deceiving way, he was a top-notch expert in his field.

“Anyway, my next step was to check up on the missing guy, that Jack Sawyer. I’m looking at his service jacket right now. Hell of a soldier until the accident. Could have, no... make that *should have* been an officer. Just needed about one year to finish his college

degree in applied mechanical engineering when he joined up.”

Well, that’s nice to know, Harlan, but it isn’t really the sort of information that means a lot to me,” Tom admitted.

“Ah, but here is the thing you’ll want to know. Sawyer had a little breakdown the night after you all recovered their rocket and checked himself into the VA Hospital in Pittsburgh. Been there since. I’m going over to interview him in an hour. I’ll let you know.”

Tom was about to thank Ames for the information when an idea struck. “Harlan? Meet me at The Barn in forty-five minutes and I’ll fly you over. I’d like to ask Jack Sawyer a few questions, unless you don’t think he’s up to it.”

“Actually, according to both him and the opinion of his doctors, he’s more embarrassed than anything else. Told me he needs to let us—let you, actually—know some things about the goings on in that group. See you at The Barn.”

The two men climbed into one of Tom’s SE-11 commuter jets and headed toward Pennsylvania.

After landing at the small Allegheny County Airport they took a twelve-minute taxi ride to the medical facility and were soon sitting across the desk from the Administrator.

“Truly a pleasure, Mr. Swift and Mr. Ames. Truly. Now, before I let you go see Mr. Sawyer, I need to tell you that he is a little frail, if you know what I mean.” He looked expectantly from Tom to Harlan and back again.

“Actually, Mr. McKee,” Harlan spoke up, “we do not know what you mean. When I spoke with him earlier today he sounded a little distracted but quite robust. So?” He looked at the man across the desk through slitted eyes saying nothing more, an interrogation technique that rarely failed to elicit a telling response.

McKee’s returned look broke quickly and he began shuffling paperwork. “Um. Yes. Well. You see, while Jack Sawyer appears to be all bravado and smoldering anger, he is quite a badly damaged individual, from a mental standpoint. He has good days and bad. Sometimes good hours and they quickly turn the other direction. He refused his lunch today and was striding back and forth in his room like a caged animal. He had to be sedated.”

Tom jumped to his feet. “You did what?” he demanded. Harlan placed a hand on his wrist and gently pulled him back down and into his chair.

“What Mr. Swift is asking, *Mister McKee*, is which of your doctors do we need to speak with in order to understand precisely what he was given and why? As there may be *Federal*

*implications*,” he bluffed but was gladdened to see the intended effect it had on the haughty McKee, “it is vital that I leave here able to respond to official inquiries from, oh, let’s just say contacts in the Secret Service and at higher levels, that all procedures have been followed, all medical standards adhered to, and that you didn’t just jab him with happy juice for your own convenience.” He lowered his chin and glanced upward at the now pale McKee. “You didn’t just jab him, did you?”

Oliver McKee sat down rather heavily, Tom noted. He had gone pale and was looking distinctly distressed. “Federal?” he managed to squeak out, somewhat pitifully. When Ames gave a single nod, McKee reached for a glass of water. Draining it in a gulp, he reached for his phone. “Get me Doctor Wilkings. Stat!”

After a minute of very uncomfortable—for Oliver McKee—silence, his phone rang. He snatched at it like a drowning man grabbing for a life ring. “Yes! Wilkings? Get to my office immediately!” He listened for a moment, blanched even more and in a softer tone added, “I’m sorry. I meant to say Doctor Wilkings, please come to my office. I have two very important men here. Thank you.”

When the doctor arrived, Tom and Harlan were mildly surprised to find that she was a tall, very attractive blonde woman of about thirty years. Following introductions, her attitude softened and she suggested that they go to discuss the patient in her office. “That doesn’t include you, Oliver!” she barked at the administrator.

Once in her office, more of a small records storage room, she indicated a couple of chairs only partly covered with file folders.

Tom grinned as he watched Harlan Ames, normally the coolest head in the room, as he fumbled with and dropped the five folders on his chair. He was so intent on looking at the beautiful woman that he only grabbed them by a corner.

“So,” she said settling down into her chair and leaning forward. “You’re here to see Jack? What’s he done this time?”

Tom explained the college’s rocket project and Sawyer’s sudden disappearance. Ames added that Enterprises was involved from an investigatory point and that Sawyer wasn’t implicated in the rocket mishap, but his sudden disappearance had raised a few flags.

She let out a little laugh. “Oh. That all? I thought he’d had another of his episodes and killed someone.” When Harlan and Tom both blanched a little, she turned serious. “I didn’t mean that. Jack has never harmed anyone. In fact, his hesitance to injure others is what led to him being injured. And, three men in his platoon were killed, so he has a lot of guilt that haunts him.”

“What’s this Mr. McKee said about him being sedated today,” Harlan asked.

The doctor, who Tom had just spotted a partially hidden nameplate identifying her as Ingrid Wilkings, winked at Harlan. “A harmless little placebo shot, Mr. Ames. Jack Sawyer is the sort of person who truly believes in the power of medicines. It was my profession that saved his life. Medicines helped. So, and may the AMA forgive me, but a few visits back I told him about a wonderful new drug called SomnaTense that would immediately relax him in times of great stress.”

“And the placebo effect actually works on him?” Tom inquired.

Ingrid Wilkings nodded. Placing a finger against her bright red lips, she whispered, “Our little secret. Okay?”

She took them down the hall and into a cross hallway. Stopping at the third door, she knocked lightly. “Jack. It’s Dr. Wilkings. May I come in with two visitors?”

They all heard the muffled response of, “Yeah.”

“Jack? This is Mr. Harlan Ames of Swift Enterprises and this younger man is the famous Tom Swift himself. Do you feel up to talking to them?”

“Yeah. But that sleepy-tense stuff is really dragging on me, Doc. I’m so relaxed I almost fell asleep.”

“Hmmm?” the doctor mumbled looking at her wristwatch, then walking over and touching his forehead with her hand. “That shot I gave you was only a half dose. It really should be getting out of your system about now. Maybe if you take a nice big drink of water.”

He picked up the glass next to the bed he was reclining on and swallowed it all and closed his eyes for a moment. “That’s better. Thanks, Doc. Hey, Tom. Good to see you again. What’s up with the rocket?”

As Harlan and the doctor went out into the hall, Tom filled in the ailing man on what they had discovered. Sawyer listened intently to everything Tom told him. Twice, a look of consternation crossed his face and once he almost spoke up, but let Tom continue. When Tom finished, Sawyer spoke.

“You may want to get your security man back in here. What I’ve got to say, he needs to know.”

Tom poked his head out the door and asked Harlan to come back in.

“Go ahead.”

“Okay,” Sawyer told them. “Two things. First, and don’t tell

anyone here, but I know that the gorgeous doc is giving me saline and not some fancy drug. It makes her feel like she is doing something for me, and I get to have her come see me at least twice a day. And hold my hand and sometimes brush the hair off my forehead. I think you can understand why that is a good thing.” He grinned at them, which they both returned. “Anyway, number two is a bit nastier. Tom will remember our little friend, Tracie Robinson, right?”

Tom nodded and gave Harlan a brief description of her unwarranted advances.

“Well, little Tracie isn’t who she says she is. I’m not certain who, but she isn’t Tracie Robinson.”

Harlan asked, “What makes you say that?”

“Easy. She’s got student ID and a story that says she’s from Monroeville over here by Pittsburgh, even down to an address on Towerlawn Drive. And, she went to Monroeville High School.”

“Okay,” Harlan said cautiously.

“The thing is, and it’s a really important thing, my cousin Shannon went to Monroeville High the same time as Tracie did. She even introduced me to her once. Beautiful girl. So’s this fake Tracie... it’s just that the one you met is all kinda short and pale and a redhead. Right?”

Tom agreed that she was.

“Well, the Tracie Robinson I met from a street that can’t be more than one block long, who is a friend of my cousin, is anything but. I mean the real Tracie’s a beauty and all, it’s just that she’s almost six feet tall, from the West Indies and her skin is about as dark as you can get!”





## CHAPTER 4 /

### WHAT WONDERS PLY THE SKY?

HARLAN'S EYES went wide. He leaned over and told Tom, "I need you to go out and keep the good doctor entertained, if she is still out there, skipper. Jack and I have some serious discussion to get to."

An hour later, Ames caught up with Tom in the cafeteria, the place the inventor had named in a note he slipped silently under the door.

Sitting down, he said, "I'm not sure that we should expend any real effort on this, Tom. I mean, it might be nice to clear Sawyer's reputation, but I think that the FBI should be given what I now know and let them pick up the fake Tracie and sort things out."

Tom agreed. Thirty minutes later they arrived at the little airport and headed back to Shopton. Ames had spent their entire taxi ride on his phone and was just finishing as they rolled forward for take-off. He had made two more calls using the jet's radio and only completed the final one as they were on approach to Enterprises and Tom needed to call into the tower.

"Sorry, skipper. But, it will be worth it. The Tracie business is now officially off my hands and onto those of the FBI. Say," he added after Tom settled the jet into the runway and was turning off to taxi back to The Barn, "I need to call Phil and tell him to back off without giving any indication that something's up." So saying, he pulled his cell phone out and was still speaking with his second-in-command as Tom shut the jet off and climbed out of the cockpit.

The next morning brought two things: a sudden rain squall that was unpredicted and put a clamp on a picnic that Tom and Bud intended on taking the girls on that later afternoon; and Harlan Ames called the inventor to tell him that Tracie Robinson had disappeared before the FBI could get to the college campus. "Evidently she got a little spooked with Phil being there, so she slipped away as he was packing up and hasn't been seen or heard from since. They'll find her, though," he promised.

"What about the phony control board and the sabotage?" Tom asked.

"Phil has everything from inside the control capsule along with their control board and transmitter. He also spoke with an FAA official who is trying to get permission to give us recordings of all radio traffic, verbal and data, in and around that area on the morning the rocket went boom. If somebody was sending signals to

the rocket, we'll know the status on that tomorrow.”

When Damon Swift arrived back in the office that afternoon, Tom was concentrating on a series of complex computations he was entering into his computer. Looking up, he held up a single finger and then went back to keying in data. A moment or so later he sat back with a satisfied sigh.

“Hey, Dad. Back from... uh... where were you?”

“I'm back from the Construction Company and a rather lengthy meeting with Jake Aturian.” Jake was Damon's oldest and dearest friend and now ran the old Swift Construction Company where many of the commercial and private inventions and devices developed at Enterprises were constructed. They also built all the various aircraft—excluding the larger rockets that were constructed out on Fearing Island—sold by the Swift organization.

“What did uncle Jake have to say,” Tom asked. Not their actual uncle, both Tom and Sandy had grown up calling him that.

“Jake had many things to say and many questions to ask me about many things. And, once I told him those things, he had many more questions for me. In the end, though, it all boils down to three things. First, he wants you to get on the phone to your contacts over in England to see if we can begin building those little *SeaSpear* one-man subs for private sale over here. I know you designed them for a secret project of the British government, but Jake sees a trend in personal watercraft, and that is that people are getting tired of scooting across the top of the water and want midget submersibles that can take them underwater, even if it is just a few meters.”

Tom smiled remembering the relatively recent invention. Capable of either running autonomously with an extra battery pack, or for a shorter period with the extra batteries removed and a single human pilot inside, *SeaSpears* had been developed to protect an underwater ring of nuclear reactors around the British Isles.

“Jake tells me that one feeler he put out says that we could sell a few thousand of them right off if we just tell people they can do underwater acrobatics. Anyway, the second thing is that we just fielded an order for seventy-two SE-11s in the twelve-seat configuration. ANA, in Japan, wants to offer upper class business commuter services between several cities over there. Jake starts building those next week with delivery of the final one in just four months. We may have a similar order from the QUANTAS folks in Australia for flights between five capital cities. Those will take our total to just over four hundred so far.”

“That's great, Dad. Not too bad for something Jake really didn't

have any faith in, huh?” He smiled at his father. “What’s the third one?”

“The third one is something that we may have to pass on. Nobody may be able to fulfill it.”

Tom looked at his father. Rarely given to being mysterious, Damon was surprisingly reticent to say anything further. When Tom pressed him, he responded.

“A contract is out to bid for something in the electronic world, but one that requires such high amounts of vanadium that it seems all but impossible. A whole new classification of green devices will be possible if someone can figure out how to create giant grid-sized storage systems using vanadium. That, all the way down to a new class of battery that will out-store, outperform and undercut the cost of our own solar batteries by factors in excess of ten times. Can you imagine an all-electric car with a ten-pound battery pack capable of five hundred miles of travel? I can. We need to keep that battery business if nothing else.”

“What about domestic supplies?”

“The U.S. gets a big chunk of it from the one and only domestic mine in Arizona. That will be totally tapped out in five years. Australia has a large-scale operation but can’t export what is needed. The biggest, but most unreliable, supply is in China. What we need is a supply of at least one thousand metric tons per year, year in and year out. Probably increasing two-fold every five years.”

“But, that’s not possible,” Tom complained. “Is it?”

Mr. Swift shook his head. “No. Truth be told, the Government suspects that China is hoarding vanadium in hopes of turning it into a political tool. It isn’t fair to the rest of the world, but the plain facts are that one of the greatest supplies lies under their sovereign soil and it is theirs to do with what they wish. No, if we—and by that I mean both Swift Enterprises as well as the free world—are to get a good, long-lasting and reliable source, we are going to have to find it elsewhere. I only hope we do,” he almost muttered to himself, “before the Chinese corner the market on vanadium-enabled technologies and put the rest of the world sitting like dogs on their doorstep.”

They talked about some of the vanadium-centric devices that Enterprises would be in position to build. As Tom was turning to go back to his desk, a thought hit him. He told his father about the Tracie Robinson mystery.

“That’s it!” Damon exclaimed hitting one hand on his desk. “Now I remember what was bothering me. Once I met the girl and then found out from you about the Loonau connection I’ve been

trying to think what was wrong with the entire picture. The man we hired and fired was a black man. Jamaican I believe. Wow. Now I remember him. Thank you for clearing that up. Let's hope the FBI can finish the job."

Tom went back to his own desk and pondered the situation while his father made several phone calls. Ten minutes later the young inventor shoved himself back from the desk and stood, stretching a little, and then headed out the door and down the hallway to his large laboratory.

He had no clear idea what he might do, but a tiny thought in the back of his mind kept nagging at him until, just short of closing time, he headed over to the Communications building.

"Hey, Tom. What brings you to my little abode?" George Dilling, the Director of Communications at Enterprises greeted him when Tom knocked on his doorframe.

"Hi, George. I need to send a short message to our space friends. Just wanted to let you know so you don't get surprised if you look at the logs in the next few days."

"What's up?"

Tom wasn't certain himself, but he replied, "I need some advice that seems to be out of our hands. I'm inclined to think that they might have an answer, or at least be able to point me in a direction."

A few minutes later Tom was sitting at the main computer tied into the translation and transmission equipment, methodically typing his outgoing message:

**Swifts to Space Friends. I believe you understand that the Earth is made of various elements and minerals. Many of these are vital to survival. Many are building components of human life. We foresee a need for large supply of one mineral that is also an element. We believed it to be in short supply on Earth. Vanadium.**

And, here, he typed in as much of the atomic weight and other information as he believed they might require to identify the actual element.

**Do you possess a method to aid in our search for a supply? Any assistance appreciated.**

He sat at the console for eleven minutes before a reply started coming across the screen. First, the series of mathematical and other symbols scrolled across followed in seconds by the English translation.

**Space Friends to Swifts. Greeting our friends. We are distressed. Understand your requirement but have zero current knowledge of location of source of your element two three. Will explore possibilities.**

*Well,* thought Tom as he rose to leave the radio room, *that is about all I expected on that!*

As he and Bud sat sharing lunch the following day, the flier asked Tom why he seemed so distracted.

Once Tom filled him in on the basics of the need for a source of vanadium, and the China connection, Bud grinned and told him, “Years ago I read a sci-fi book about a man who knew he was hearing digging going on under his house. He tried and tried to get the authorities to come check it out, but all he got was a threat to be shoved into the looney bin. Anyway, as it turned out, it was digging. A million Chinese had been digging a tunnel a few hundred feet down around the world and had made it as far as his house. Later on, they popped up out of a thousand holes and tried to take over the U.S.” He nodded and waggled his eyebrows at Tom.

Tom sat there unsure of what to say. Finally, he risked, “And... you’re telling me this... because...?”

Bud’s shoulders slumped and he looked surprised. “If they can do that all using people and picks and shovels, why can’t we dig starting at, say, Japan or South Korea and go right under them and mine all that vanadium ourselves? I mean, with your atomic earth blaster and the Mole Mobile, they’d never know we were there!”

Bud was referring to Tom’s Geotron, a large subterranean vehicle that used powerful repelatron emitters to temporarily shove dirt, rocks and water aside allowing it to ‘glide’ through solid ground.

“Oh, flyboy. Boy oh boy. That’s a sure way to start a war or even

worse. If we did that, even our own Government would disown us.”

“Well, at least it was worth a try to mention it,” Bud told his friend.

They discussed several possibilities but nothing solid came from the conversation. Tom was about to head over to his underground office and small lab when his TeleVoc pin announced an incoming communication. He tapped the small disc pinned under his shirt collar and immediately ‘heard’ the voice of George Dilling inside his head. Bud watched in silence as Tom nodded a few times and his jaw moved to some silent speech. Finally, Tom said, “Right,” out loud and tapped the disc again.

Standing, he motioned for Bud to do the same. “Come on. We’ve got a message from our friends waiting.”

They arrived at the radio room within minutes and Tom immediately sat down and keyed in his security code. Because of a one-time breach in security, no communications coming from the space friends ever was displayed without one of four people keying in the proper sequence. Those with the necessary code were Tom and Damon, George Dilling and Harlan Ames.

The screen announced a successful match in Tom’s entry and then displayed the message:

**Space Friends to Swifts. Have detected large deposit of element two three to be found seventy one percent around Earth sphere and thirty two percent polar orbit above mid-planet point.**

**Does this assist.**

Bud clapped Tom on the back, but his celebration was short lived when Tom explained that the location provided was right in China and was already known.

With a sigh, Tom typed a reply:

**Swifts to Space Friends. Location given is known but controlled by political group not wishing to allow others to obtain. We thank you, but must find other location.**

“They’re so nice to us, Bud, that I hate telling them ‘thanks but no thanks’ on anything like this.” They both got up and left.

“Listen,” Tom said as they hiked across the tarmac, “I want to head up to the Outpost to do a little hands-on searching for Pluto. Want to come along?”

Bud stopped right in his tracks and stared at the inventor. When Tom turned to face him, Bud gave an exaggerated shrug and said, “Duh! Of *course* I want to go. Why in the world would you even have to ask—” He trailed off as he saw the grin spreading across Tom’s face. “Oh. Kidding, huh? I should have known.”

They agreed to have a nice dinner with the girls that evening and then head to Fearing Island early in the morning.

Tom make a few calls and arranged things for their flight and a one-day stay at the giant wheel in geosynchronous orbit while Bud called both Sandy and Bashalli to see where they might wish to have dinner. This was followed by him making reservations at a small German restaurant near a mobile home “Estates” village of Schroon Manor about ten miles down the western coast of Lake Carlopa.

“It’s been in business for about twenty years,” he explained to Tom as they drove to pick up both girls at the Swift home. “They cater mostly to German and Austrian and Swiss tourists who stay at the units down there. I’d never heard of them until Bashalli mentioned that her father and mother had dinner there a few weeks ago. Supposed to have great schnitzel—”

“Take a breath, flyboy. And, save the descriptions for Sandy. Okay?”

Bud grinned. “Yep!”

It was a pleasant early evening so they drove down the two-lane, well-paved county Highway 9 with the convertible top down on Bud’s car. Both girls had declared that they would “...sit in the back with the wind practically ruining our hair...” as Sandy put it, but the boys knew instantly that she was just blustering as both she and Bashalli broke down into gales of laughter.

The meal was better than described by the Pakistani girl. As they ate, she told them, “My mother and father were impressed by the purple cabbage dish they shared, and father can not stop talking about the veal. It was his very first time. I had to explain to him that it is just very young beef. Which, of course because I am merely a female, he did not believe until Moshan told him the same thing.” She giggled. Everyone knew that the senior Prandits and

her older brother Moshan were still traditionalists at heart, and that she was most decidedly not.

Bud started to bring up the issue of the missing Pluto, but Tom suggested a happier line of discussion.

“Bash is trying to find a way to tell all of her relatives back in Pakistan about our engagement but has run into a few roadblocks. Tell them,” he urged.

“Well,” she began, hesitantly, “as you know my family really wished that I might meet and marry a Pakistani man. Now, mother and father and even Moshan have come around, but have cautioned me to take a lot of time. Perhaps even to not tell other family at all until after we are married.” She looked at Tom. “I hate not being able to share how joyful I feel, but—” she stopped, seeing the look on Tom’s face. “What is it?”

Tom, who was actually looking over her shoulder, refocused his gaze on her. “It might be nothing, but I could have sworn that I just saw the girl who has been posing as Tracie Robinson sitting at the table by the window.” He gave a brief description of the possible impostor.

“Let’s go get her,” Bud suggested wiping his mouth and dropping his napkin on the table. Before he could rise, Tom shook his head.

“Give me a minute to call Harlan. We actually have no real reason to try to capture her.” He placed a quiet call on his cell phone. Two minutes later he turned back to them. “Harlan says the FBI is ‘actively searching’ for her and that we should only follow her as long as we—” He glanced around the room. All but one table still had diners sitting at them, but the table where the fake Tracie had been was now empty.

Tom hailed their waiter. “Did you see where the young woman and her companion who were sitting at that table over there,” he said pointing at the window, “might have gone just now?”

After swinging his head from side to side and looking around, the waiter angrily exclaimed, “No. And they left before I could give them the bill. I must call the police.” With that, he stalked off.

Tom called Harlan again and apologized for losing sight of the young woman but promised to be extra careful on the drive back to Shopton.

The foursome decided against dessert and paid their bill and left.

There was no sight of any other car on the road until they got to



within a mile of the city limits. They dropped Bashalli off at her parents' home where she was living until an apartment near her work that she wished to rent became available.

Next, Bud swung by the Swift's and let Tom and Sandy out. He would not let Sandy head for the front door until she gave him a big kiss. That accomplished, he hopped back in and drove away.

"Someday, Tomonomo," she said to him as they opened the front door, "you must tell me what I can do to get Budworth to pop the question." She smiled and winked at Tom, a sign he knew meant that she was both serious and not serious at the same time.

With the senior Swifts upstairs, Tom shut off the lights and made certain all the doors were locked before heading up to his room. As he passed Sandy's door, he could hear her talking to herself, but all he could make out was, "Oh, Bud, what to do about you?"

Although late in October, it was another beautiful day when Tom awoke. After a quick breakfast he decided to walk to work. He wouldn't need a car for the next full day or so as they were going to fly out to Fearing at nine.

Five short blocks away from the Swift home was the start of a forested area that might someday be developed, but for now it was almost three thousand acres of totally unspoiled woodlands.

Strolling along the narrow country fire lane that frequently provided a shortcut to Enterprises, Tom's mind began feeling a sense of foreboding as he found himself looking at several locations where he had been attacked or waylaid in the past.

"Good thing nobody's after me today," he said aloud.

Five minutes later he approached an old 'friend.' It was a V-shaped larch tree that had been instrumental in stopping, all-too-suddenly, his little sports car five months earlier when foreign agents had forced him off the road. The car, ending up upside down in the V, had been an almost total loss; Tom had been put back together by Doc Simpson.

As he passed by, a woman with short black hair, wearing sunglasses, stepped out from behind the tree. "Can you help me, please?" she requested in a faint French accent. "It is my husband —" and she pointed behind the tree.

As Tom walked down the slight slope, a heavysset man suddenly stepped out from behind the tree. Pointing a gun at the inventor the man rasped, "Get over here, Swift!" in an accent Tom decided might be Basque or disguised French.

Two thoughts went immediately through Tom's mind: *I've got the stop taking this road;* and, *As long as he's the only one with a gun, I should be able to tackle him!*

As the woman stepped back, the man motioned Tom to move faster by swinging the barrel of the gun to the side and hissing, "Now!"

The inventor approached cautiously, walking down the slight incline from the roadbed and into the forest area that surrounded the lane. He slowed down as he got within five feet and assessed his chances. They appeared good as the man was now looking around, almost wildly, as if worried that someone would discover them.

*Just another step and I can kick that gun out of his hands,* he told himself. *Good thing she is just standing there!* Tom took the step and tensed for his attack.

At that moment, an unseen accomplice walked up behind Tom and shot him in the back of the head.

Tom's last thought was, "Crap!"

## CHAPTER 5 /

### QUICK TRIP OUT AND A LOOK AROUND

THE FIRST thing Tom thought, as consciousness returned, was that his head *really* hurt. He opened his eyes and found that he was either blind or it was very dark. He closed them again. Then, the memory came back to him that he had been struck in the back of the head by something that made his brain explode. It obviously had not been a bullet as he was certain he was both alive and had full brain functionality.

It also had not felt like the usual lead sap or board or piece of tree limb that he typically got conked with.

As he pondered what it might have been, he realized that he was no longer outside and that his captors could be looking at him at that very moment for any signs of life. He strove to slow and regulate his breathing so he might appear to still be unconscious.

He listened. There were no sounds other than his own rhythmic breaths, so he slowly took stock of his body's situation. He chose to ignore his head until he might be able to feel for any damage. From the pressure points on his body gravity told him were touching a pliable surface, he decided he was partly on his left side and mostly face down. By carefully tensing various muscles he discovered that his arms were pulled back behind him and tied with something that flexed slightly. Tape? Bungee cords? He'd find out later.

His legs were bent at the hips and knees and felt like they, too, were tied together with a stretchy material just above his knees and again at the ankles.

He listened again. Still no noise, so he chanced trying to straighten his legs. They moved out but stopped a few inches later when his toes pushed up against something.

*Okay, he thought. Time to do a body check.*

Three minutes later he has fairly certain that he was uninjured, other than his throbbing head. He also had noticed the dusty, stale smell of an old wool blanket just under his face. It was unpleasant but tolerable.

Tom chanced opening his left eye, the one closest to whatever it was he was currently on. As he got it open a slit, he was distressed to find he could still see absolutely nothing. *Oh, jeez!* he thought. *Maybe they did shoot me. Did a bullet hit blind me?*

That also brought up the thought that everything he had just done might be the final thoughts of a dying man. His adrenaline

began pumping and he felt panic rising. Taking a few slow, deep breaths, Tom tried to relax.

*I'm obviously alive. I am not dying. I'm not even sure if I've been injured. Just relax and do things the smart way.*

Without moving, he risked opening the left eye fully. Nothing! He opened his right eye. Still, nothing visible. Then, as his eyes adjusted, he could just discern a small horizontal sliver of light. He couldn't precisely tell his orientation to it, but decided from his own body position that it must be a foot or more below his head height. As it became more distinct he realized it had two even fainter vertical hairlines of light rising from either end.

A door. It had to be a door.

Tom lay still for a minute, trying to think of what this might all be about. The longer he lay there, the more his eyes became used to the low light levels.

He slowly tilted his head so he could see what was to the left of his position, and his heart almost stopped. There, just a few feet away was the dark shadow of a body sitting in a chair, facing right at him!

Tom ceased any movement and concentrated on what his ears were relaying to his brain. He held his breath. All he was able to hear was the rushing of his own blood past his inner ear.

He looked back at the chair. The body hadn't shifted. It wasn't breathing, apparently. Tom's blood ran cold as he realized it might be a dead body. But, whose?

*If he's dead, then I've got to get out of here pronto,* he realized.

He flexed his arms behind him to see how tight his bonds were. Fairly tight, but only above the elbows and not his wrists. Using an old escape magician's trick, he took a deep breath and flexed his arms, shoulders and chest. A moment later when he relaxed, his bonds seemed to be looser. He repeated the process five more times before he was able to wiggle his right arm enough to turn it and withdraw it a few inches from the binding point.

Another three flexes and pulls and the arm slipped out. He swung it in front of him and use it to push his upper body upright. There was no visible or audible response from the body in the chair so Tom concentrated on getting circulation back into his arms. A minute later he reached back and grabbed the loop of what felt to be electrician's tape that had held him.

The same tape had been used on his legs and he quickly found the ends and unwrapped himself. Now, Tom knew the body had to be deceased. The amount of noise he had made getting untied

would have awakened anyone.

He tiptoed to the door and placed his right ear against it. There was no sound coming from the next room, but to be safe he dropped to the floor and listened at the half-inch gap at the bottom of the door. Still not a sound. His legs were weak from the effect of having been tied in a cramped position, so he reached up to find something with which to help pull him back to his feet.

His fingers brushed the light switch and to Tom's horror, the lights glared on, practically blinding him. He ducked back down in case the body wasn't dead. He really didn't want to be a target again.

When nothing happened for a few seconds, Tom turned his head around and looked at the chair. An emotional burble escaped his lips. There, sitting lifeless in the chair, was a burlap sack of potatoes.

His captors either had a sense of humor when they posted the 'sentry,' or they hadn't realized it was even there.

Tom switched the lights back off and went to the window he had spotted. While he waited for his eyes to readjust from the sudden light he felt around the frame. He tried to open it. It was either painted or nailed shut. Unless he wanted to wake the neighbors by breaking the glass—or worse yet, alert his captors—he would not use that exit.

So, he returned to the door and repeated his listening. There was still no noise. He retreated to the back of the room and pulled out an old friend, his pencil radio. This one, looking more like a pen and operating unlike his first, would auto-search for any signal to work with: cell phone, walkie-talkie, wireless voice over IP, and even satellite phone wavelengths. He knew that it could find some sort of signal from anywhere on about seventy percent of the globe.

Two seconds later, the minuscule LED at the top of the pocket clip glowed a soft blue. A phone signal!

A cell tower must be nearby. He pulled the clip away from the shaft and rotated it up until it stuck above the pencil. It was now both an effective antenna as well as providing the tiny speaker for him to listen to whomever he contacted. A half swivel of the lower portion exposed the microphone grid and activated the radio.

Tom voice dialed Enterprises' Chief of Security, Harlan Ames', number. It must have been nighttime as the call went to voicemail. Tom spoke a five-digit override code and the system responded: "Routing call to Harlan Ames. Wait..."

When Harlan answered, Tom quickly and quietly gave him the details of what had happened.

“Oh, thank god, Tom. We’ve been worried sick since your folks called to say you hadn’t made it to work or come back home. We’ve had five teams out searching for you the past nine hours. Where are you?”

“No idea, Harlan. I’ll set the radio to beacon mode once I get off. All I can say is that it seems like I’m alone. I just don’t know for how much longer. Should I try to get out?”

“No, Tom. You stay put. Barricade the door if you can. Assuming you’re in Shopton or somewhere near, we should be able to get to you in no more than fifteen minutes.”

Tom clicked the radio off and pressed the top button. The LED flashed through its four colors indicating the beacon signal was being broadcast.

He pulled the sack of potatoes out of the chair and quietly moved it to the door, replacing the sack for added weight. He also swung the old sofa he had been lying on so that one end was up against the front of the chair. It wouldn’t stop a couple of determined people, but a single man might have problems getting the door opened.

Eight minutes later there was the sound of a distant door being smashed open and shouts of “Police! Don’t move!” and “Clear!” as other rooms were searched. When a heavy blow came to his door, Tom stepped back and called out, “It’s Tom Swift. I’m in here, alone. The door’s braced. Give me a minute.”

More people could be heard amassing outside.

“Are you okay, Tom?” Harlan asked, worried.

“Yeah,” Tom replied, wearily. “Give me a sec, Harl,”

“Uh, Tom? I hate to be a stickler for security stuff, but can you tell me the code, please?”

Tom chuckled. The code was a four-digit number. Senior Enterprises employees had one. If they gave the code, it meant they were under duress. If they said any other number, it meant that they were safe. The idea was that even if they gave up the number under torture or so-called “truth” serums, if it were used by their captors, that alone would set off the alert.

“Three-fifty-three, Harlan.”

“Okay. Great! Tell me when we can open the door.”

Tom had been working to move his makeshift door jammer and was just finishing. He turned the knob and stepped back. “Ready,” he said.

The door flew open, but nobody was visible. Knowing the drill,

Tom stepped out into the hall where he received a big bear hug from his Security man.

“Where are we,” Tom asked as they walked down the hall and to the splintered front door.

“Only about three blocks from your house, skipper. On Weinhart Way. Where did you get taken?”

Tom told him. Before getting into Harlan’s car, Tom turned around and asked the man to look at the back of his head. “What does it look like?” he asked.

Harlan looked and then advised the young inventor, “Clench your teeth and brace yourself.” Tom did and there was a momentary shock of pain in both his neck and a spot about half way up his skull. When he turned to face Ames, the man was holding the two tell-tale barbs and trailing wires from a TASER.

“Oh,” Tom said seeing them. “That’s why my head exploded. Any idea who zapped me? Or, why?”

Ames shook his head. “No, and no. I’m leaving five of my best here to look for any clues. From the little I saw it looks like whoever clobbered you, dumped you in that house and left. There’s no indication they intended to come back.”

After receiving the standard, “You really need to be more cautious, Tom,” lecture from his Security chief, Tom was dropped off and into the waiting arms of three very relieved women—his mother, sister and fiancé—and two anxious but trying to remain calm men—his father and Bud. There were hugs and a few tears as they greeted him. And, though very tired, Tom spent a half hour telling them what happened and the little he knew. He concluded with:

“Harlan’s men are looking for anything to tie to my attackers, but for now, they appear to have vanished. And, with that being said, dear family and friend and Bash, I am going to take a good, long and hot shower and climb into bed. See you all tomorrow.”

He kissed Bashalli and trudged upstairs.

When Tom awoke and came downstairs, he was only mildly surprised to find that both Bashalli and Bud were sitting at the Swift’s breakfast table, waiting for him. They all looked up when Tom entered—Bashalli from her conversation with Sandy and Bud from concentrating on a bowl of cereal.

“You two are up and over here early,” Tom commented.

“Never left,” Bud replied around a mouthful of crunchy nuggets.

“Bud was too tired to drive Bashi home, so he slept in the guest room and Bashi bunked with me,” Sandy explained.

“How are you feeling, Tom,” Anne Swift asked, sitting down with a cup of coffee for herself and one for him.

Tom lightly rubbed the back of his head. “Except for the punctures back there, I guess I’m feeling fine. At least they didn’t hit me and give me another concussion!”

“Nonetheless,” Anne said, “Harlan Ames has ratted you out and Doc Simpson phoned twenty minutes ago to tell me that you *are* coming by to see him right after you get to Enterprises.” She nodded at her son and he smiled back at her.

“But, Bud and I are going up to the Outpost,” he protested. “It’s just going to be a quick trip up and back.”

“Bud agrees with the professionals, and the parents, on this one, skipper,” the dark-haired flyer stated. “Until you are cleared by Doc and your mother, no going up there.” He pointed at the ceiling.

“Okay. As soon as I get there—”

“As soon as I drop you off at the Dispensary,” Bud interrupted. “Both Harlan and Doc have given me specific orders to not let you drive or be alone until you get to work and are checked out.”

Tom finished the pieces of toast with boysenberry jam his mother had set in front of him, gulped down his coffee—cooled with lots of milk—and got up.

“For being here even if I didn’t know it,” he said as he kissed the Pakistani girl. “Unless Doc nags me into bed early, how about dinner tonight?”

She readily agreed. She stood up and wrapped her arms around Tom’s waist. “You will promise to follow orders?”

He kissed her again and whispered in her ear, “Truthfully, I’d rather spend the day and night with you.” He could feel both his heart and hers beating faster at that admission.

Doc’s check of Tom involved a few pokes and prods, a good listen to his heart, a couple of questions, the usual, “Follow my finger,” along with the application of an antiseptic gel to the two punctures in his head.

“Wish I could declare you to be good as new, skipper, but you haven’t been that way since the first day I met you!” The young medico smiled. “Just let Bud drive you around for the next eight hours or so. It’s rare, but there are a few documented cases of delayed brain issues in taserings like yours.”

Tom promised to behave and then walked over to the Administration building and his large lab. He had been there less than an hour when Harlan Ames called him.



“Skipper? We found some clues at that house. Want to come over or are you busy?”

“I haven’t really gotten into anything yet, so I’ll be there in ten minutes.”

When Tom arrived, he was shown into Ames’ office by the receptionist.

“Hey, Harl. What have you got?”

The big Security chief looked across his desk and said, “Well. For one, we know that house was just a place to dump you. It has been empty for a couple months, ever since the owners moved down to Florida. They rented it over the phone, cash with a big deposit, to a man identifying himself as Felix Shaw, although when they received the rental agreement back from him it was signed ‘C-h-a-t-t-e’.”

Tom grinned. “French for a female cat?”

Now, Ames grinned. “Yeah. When I spoke with Mr. Morse, the homeowner, this morning he was very embarrassed. He was able to tell me that the man he spoke with had a noticeable French accent. Anyway, it was rented five weeks ago for a six-month period, all in advance. Looks like your kidnappers didn’t know exactly when they might be able to grab you.”

“Are you certain it was me they were after?”

Ames nodded. “Yes we are. There was a folder left on the kitchen counter with your photo in it. Probably taken within the past six to eight months using a telephoto lens while you were downtown at The Glass Cat. The good news is—”

“There’s good news from this?” Tom asked a little incredulously.

“Oh, yes. There is. And it is this... since they weren’t sure when they might be able to get you, my thought is that this isn’t associated with any more mysterious or dire circumstances than a lightly planned crime of opportunity. That’s born out by a scribbled set of notes in the folder plus a pre-typed letter. Looks like they never got the chance to send it. Anyway, the notes have various figures from a half million dollars up to ten million written on them. The typed letter mentions a payout of five million for your return.”

“So, this was a simple kidnapping for ransom?” Tom asked.

“We think so. Except for one thing. Recognize this?” Ames held up a red wig and shook it slightly.

The young inventor’s jaw dropped. Tha—that looks like the hairstyle Tracie Robinson wore. Wow. So, she was wearing a wig?”

Harlan nodded. "Looks like it."

Tom returned to the Administration building in time to run into his father in the hallway.

"Ah, Son. I was just about to look for you. I got off the phone a few minutes ago with the head of NASA and the Secretary of Defense. They had been discussing sending a manned mission out to where Pluto isn't to see if this might be a natural phenomena, or if there is something sinister lurking out there."

"But NASA doesn't have anything that could make that journey. Do they want us to take a look?"

"That was an awfully eager question, Tom. And, yes. They have officially requested that Enterprises mount an expedition out to where the planet—er, planetary object—should be. I told them it might take a few months just to get our plans together, but that you would be heading any mission. And, once I explained what it would take to put a manned team out there as opposed to a robotic probe, they understand that the first thing that goes out isn't going to include astronauts. Hope you don't mind me volunteering you to manage this," Damon asked with a twinkle in his eyes.

Tom gave his father a smile that said he was quite willing to take on the project, especially as he had almost finished the preliminary design for his repelatron probe.

After calling a meeting of the heads of several departments, Tom outlined the tasks ahead of them.

"Most of you were involved in the high-velocity probe we sent out past the Moon that our space friends picked up. Purpose built for speed with the instrument package barely fitting up in the nose cone. Well, we have an even bigger task with getting a probe out to where Pluto used to be."

"What's the package going to contain, skipper?" asked Hank Sterling. As Enterprises head of pattern making, his normal job was to take all major designs and create the patterns, forms, molds and jigs to allow the Swift Construction Company to build many copies of the finished machine or device. In one-off cases such as this one, he and his team would be hand-building many of the static components.

"Well," Tom replied. "Obviously we need to put up a sensor array to scan an area of at least five or even ten million miles all around the probe. We'll look for magnetic signatures, radiation, electric signatures, particles that might be associated with Pluto assuming it exploded—"

"Or, was blown to smithereens," Bud piped in. Seeing the look on Tom's face, he apologized. "Sorry. Thought I'd try to lighten

things. Not the time for that, I see.”

Tom shrugged. “It’s not that, Bud. It’s the thought that something *might* have blown Pluto up. Something that might strike again. That puts an even heavier emphasis on our getting things out there pronto! So, I think we also need a spectrometer feeding off of a pinpoint laser probe. Uh, Alan?” he indicate the department head for Photometry and Optics. “Is it possible to build something that can give us a range of at least a thousand miles?”

Alan hesitated before nodding. To Tom it looked very reserved. “Well, we can and we can’t. We can easily focus a high-powered laser through an electromagnetic focal point. Heck. Your little e-gun uses a version of what we need. The trick is going to be in recovering the signal. Unless we hit something dead on, and on a flat spot, it will reflect off at all sorts of angles and we’ll recover zero data.”

“Ah. Right. Thanks for reminding me about physical laws. So,” he looked around at the five people, “what *can* we do? Somehow we need to locate anything that might have been blown off and get data about it. Thoughts?”

Hank raised one hand. “Do we need to get measurements from everything we find, or will one or two samples tell us enough?”

Tom scowled as he thought this over. “Ideally, hundreds of data sets will help us understand what is going on. A few dozen will tell us enough to decide if this was some catastrophic accident or a deliberate attack. With, oh, maybe three or four samples we can tell if Pluto was blown apart. We know enough about its probable composition to get to that point. Why do you ask?”

Hank smiled. “Because, a friend of mine can probably create a set of small mini-missiles that would be able to home in on something in a size range of perhaps a foot and up to a couple yards wide. My guess is that these could be propelled by small repelatron drives and might be able to get to anything a couple hundred thousand miles or maybe a million miles away from the large probe, crash into whatever they find and that would spread out enough bits and pieces that Alan’s laser probe could get a good reflection from the debris field.”

Bud asked, “Who do you know who can build those, Hank?”

Tom grinned. “I believe he means yours truly, Bud. That right, Hank?”

Sterling nodded. “Yep!”

“Alan? Can you get a good reflective signal from a wide debris field?”

“Give me a second, please.” He had already pulled up a scientific calculator on his touch screen computer. After going back and forth for more than three minutes he looked up. “I believe that we can do it! I’ll have to swing the beam all around pretty quickly, but that’s old technology. You see it in every planetarium laser light show. So, sure. It might very well work.”

“Great. So, let’s talk about the delivery vehicle.” Tom suggested. He described his ideas. For more than two hours the team discussed and diagrammed both the main body and the drive system.

The rocket would be almost two hundred feet tall, yet only about three feet wide. The first stage would be a solid rocket capable of lifting the vehicle past the one hundred mile point. As it dropped away, a massive array of batteries would power a special repelatron adjusted to repel both the iron in the Earth’s core as well as water. It would run constantly, accelerating the probe out past the moon, and then past the orbits of Mars and the other planets.

To add to the power available, a large solar array would unfurl from an area just below the payload capsule and orient itself back toward the sun.

In the end, they agreed that if a constant acceleration of 5 Gs could be maintained to the halfway point, and the same deceleration force used, that it would only require about thirty-point-four days to make the trip to the edge of the solar system.

Acceptable for an unmanned probe, but deadly if humans were to try it!

## CHAPTER 6 /

### SURPRISE!

THE PROBE rocket streaked skyward from Fearing Island three weeks later. It had been a monumental task to build the rocket in that short time, but many of the components were readily available so only about ten percent had to be manufactured from scratch.

Tom and a team of twenty-three engineers hand-built the large probe, located and installed all the equipment that would be included, and readied it for the mission.

The optical department had bad news along the way. They could not guarantee any success in attempting to blast apart something at great distances and then getting even their best small laser to pull in enough data. Disappointed, Tom knew that function was back on his plate.

He took three days off to build ten small ‘suicide probes’ that would be sent out to any chunks of debris that might be located. He quickly realized that powering them using even the smallest repelatron would make them too large to carry.

A small explosive charge in each probe would launch them on their fast, one-way missions. Their gimbal launch mounts would aim and get each softball-sized probe heading in the direction of a target, while a small computer powered by a cell phone-sized battery would operate the steering controls—a set of four nitrogen-powered jets that would only be used for minute course corrections.

Once they were released, they would continue forever, or until they were captured by any gravitational force. Or crashed into something as was hoped for.

Each one contained two instruments and a small transmitter to send data back to the larger probe. They could measure radiation—in case some type of nuclear explosion had blown Pluto apart—and a single-use spectrographic analyzer. If they hit anything, or caught something in their forward intake port, it would be quickly vaporized by a laser and analyzed for its component molecular structure.

They would not be traveling fast enough to smash apart on impact, so he was fairly certain they would send back data on anything they encountered.

With no planet to use for boomeranging back, and all fuel expended in getting there, the mother probe would be on a one-way

trip. After passing through the area at very slow speed and seeing what it might find, it would continue to drift outward for many weeks before slowly being pulled back by the Sun's faint gravity. It would take almost a decade, but the probe would finally perform a death plunge into the Sun unless Tom could later figure a plan to recover it.

But, that was of secondary importance to the data the probe would hopefully return.

Things went so smoothly that Tom worried he was forgetting something. It wasn't until one week before the launch that he realized what *was* missing, or, at least that what he did have was substandard.

Normal radio communication would take far too long to get back data.

His father made a suggestion and Tom immediately embraced it. Earlier that year he had managed to communicate with and actually bring their space friends to Earth. One of the parting gifts they had given Tom and his father was a radio transmitter and receiver that worked on principles Tom could only guess at. What it could do was to span the distance between Earth and Mars in just two seconds.

He sent a new message asking if the space beings might be able to deliver a small version of the transmitter. They quickly agreed to send Tom five of them. They arrived via a missile that parked itself one hundred feet away from the Outpost in Space two days later.

Thirty days after the launch, the first data began coming in.

Tom was immediately disappointed. And, at the same time, he was excited by what the large probe had been able to find.

*Nothing!*

But it still had almost a whole day before it was due to arrive at the spot where Pluto should be. They continued to receive little data for several hours and then the probe suddenly went silent.

"That could mean one of several things, Dad," he said as they sat discussing the first reports late that afternoon. "But, the two biggest I believe are that with nothing out there, that means that Pluto wasn't destroyed—unless you believe in alien disintegrators, and even that would leave some sort of residual materials—and that it must have been moved."

Damon Swift leaned forward in his chair. "But, where? And, by whom? Plus, there must be some reason the probe stopped sending any data."

"To tell you the truth, I haven't the vaguest idea even where to

begin. Our space friends told us they had no idea—”

“But, that was weeks ago,” his father interrupted. “Why don’t you ask them again?” It was something Tom had considered, but had not yet acted on.

“Right. I... we should do that!”

The two men headed to the Communications building where they met up with George Dilling.

“Need to fire up the S-FIT, George,” Tom told him, referring to the acronym he had given the instantaneous transmitter from their friends.

“One Space Friends Instant Transmitter/Receiver coming up,” George replied. If you don’t need me hanging over your shoulders, I promised my wife that I would actually appear at a family dinner on time and shaved and showered for once.”

With that, he backed out of the lobby, leaving Tom and Damon to head to the transmission room.

They quickly agreed on the message to send:

**Swifts to Space Friends. We wish to request any new information you might have discovered relating to disappearance or our ninth planetary body. Have sent our probe to previous known location and found zero debris or indication of disaster or attack. Probe vanished.**

**Also, wish to thank you for quick action to provide the transmitters. Believe distance is no matter. It seems to take exactly as long to communicate with you as to receive data from probe.**

**Do you communicate this speed with Masters.**

Tom hoped this was going to be one of those times when messages were returned within minutes.

“Here’s the reply,” Damon told him less than twenty seconds

later.

**Space Friends to Swifts. Inverse order to inquiry.**

**Pleased to provide transmitter for probe. Reduced version of communication units for Masters. Important to us to find out what occurred. Additional, have no provable information but believe our Masters may have dealings with your planetary object nine.**

**Attempting to communicate with them. Will answer again if anything is discovered.**

Both inventors looked perplexed.

“Well, that would be a strange turn of events,” Damon told Tom.

“What in the world could they want with Pluto?” Tom asked incredulously. “It’s just rock and ice and a few minerals. This is very strange, Dad.” A sudden thought hit him. “Does Pluto and its mass and gravity have any effect on the solar system at large?”

“Do you mean, if Pluto isn’t there, will we all spin off into deep space?” Mr. Swift’s eyes were twinkling, but both he and Tom realized the importance of finding the answers. “I’ll call Grandyke University and see if Professor Keoke can give us some answers.”

The professor had been the previous manager of the Keck Observatory in Hawaii and was an acquaintance of Damon’s from more than a dozen years back.

When the call was completed, he phoned Tom in his underground lab. “Got the answer to the ‘What does Pluto do for or against us’ question, Son. The good news is that in its current position and orientation to the Earth, it has pretty much zero effect. However, the news isn’t all good. It seems that it does have an effect on Uranus, and especially on that planet’s moons of Bianca, Juliet, Rosalind and Belinda. The others are large enough that their own gravitational pull and mass keep them in position. It’s those tiny ones that might be ripped away from the planet if Pluto comes too close, but the prevailing opinion is that might be Pluto’s influence that keeps them from crashing down into their mother



planet.”

“Is anything going to happen soon?” Tom inquired.

Mr. Swift laughed. “Probably not for about eleven hundred years. It will take that long for Uranus and our missing friend Pluto to pass near enough for that to happen.”

Now Tom laughed as well. “I hope we have an answer before then,” he stated.

Fifteen minutes later Tom drove home and showered before dressing in a light suit. He was taking his fiancé out for a night of dining and dancing at the newly renovated Shopton Golf and Tennis Club.

When he arrived at her parents’ house, she was just coming down the stairs from her bedroom.

“Oh, Bashi,” her mother gushed. “You look absolutely like a princess in that beautiful dress your aunt sent to you. Doesn’t she look wonderful, Tom?”

Tom had to gulp when he saw how form-fitting the dress was and what an amazing form it seemed to flow over and around. “Golly, yes. Gee, Bash. Now I feel like I underdressed for the occasion!”

She came over and embraced him. “You will wish to turn to one side, mother, or you will be in peril of seeing me kiss Thomas on the lips. And, it will not be a fast peck either!” There was a short and not very convincing gasp before the Pakistani girl delivered on her promise.

Tom was now totally speechless. He turned to look at her mother and saw that the older woman was standing there, head tilted to one side, looking lovingly at her daughter. He whispered in the girl’s ear, “Good thing your father or Moshan weren’t here to see that.”

Bashalli giggled and released him from her grasp. “You look just fine, Thomas. And, do not be fooled by how I appear in this dress. My aunt absolutely refuses to believe that I am not two sizes thinner than I am, and this dress is so tight that I will not be eating large amounts of food, plus I may not be capable of dancing anything other than very slow steps. I hope that you do not mind?”

With a parting wish that they might have a nice evening, they waved from the sidewalk to Mrs. Prandit and climbed into Tom’s sports car. Even though it was a fine early evening, he had put the top up to spare Bashalli’s hair and makeup from the swirling winds.

A valet opened Bashalli’s door, assisted her in getting out, and then ran around to take the keys from Tom, giving him a metal disc

on a leather strap with the number of their keys. Taking her arm, Tom steered her to the large wooden doors that were opened for them by a pair of doormen—or, to be precise, a doorman and a doorwoman—both in fancy livery. Inside, the clubhouse featured a long and wide hall with a coat check room to one side and restrooms on the other.

The sounds of conversation and glassware came from the end of the hall and seemingly to the right. The restaurant was about half filled with men and women that Tom recognized from many of the businesses around town. He nodded to several who turned to look at him and had raised their glasses in greeting.

And it did not escape Tom's eye that several of the women were staring openly at the beautiful Bashalli.

The maître d' approached them, took their names and checked his list of invited people. Smiling, he turned back to them. In a slightly apologetic voice, he told them, "I am so very sorry, Mr. Swift. But there appears to have been a slight mix up on your table. We seated another couple there about ten minutes ago and have no other tables that will be free. Would you mind sharing the table with the other couple?"

Tom, now slightly warm around the collar, but not wishing to create a scene, told the man, "You may seat us at that table, but I will want to speak with Mrs. Rittenhouse, the manageress of the restaurant, about this."

The man gave them a weak smile and motioned for them to follow him. As they approached, Tom saw that the two people at their table were seated with their backs to the approaching trio. The maître d' leaned over and spoke into the man's ear, who promptly stood up and spun around.

"Hey, skipper! Hi, Bash!" Bud greeted them. Sandy also stood up and gave her best friend a hug.

Now in on the joke, Tom turned to the man who seated them and said, "It looks like there will be no need to bother Mrs. Rittenhouse. Thank you."

The four had a wonderful prime rib dinner and had just ordered their desserts when the orchestra struck up the traditional 'ta-da' chords that announced that someone on the stage wanted their attention. The room quieted quickly and a somewhat large and formidable woman dressed in an overly-spangly evening gown and wearing a rather ornate coal black wig smiled and waived at everyone.

"Helooooo," she practically cooed into the microphone that rewarded her proximity by squealing feedback for a few seconds.

She seemed to take it with good grace. “I wish to welcome you all to our grand reopening soirée.”

She spent fifteen minutes thanking various people both in attendance as well as several, “...whom most unfortunately could not be with us this evening due to circumstances...” individuals.

Bud leaned across the table and whispered, “And, those circumstances are that they didn’t want to listen to old lady Rittenhouse!”

“Hush, Budworth!” Sandy said to him. While nobody had heard Bud’s comment, many people heard Sandy’s admonishment and numerous heads turned to see what was going on, possibly in the hope that it would be more entertaining than the ongoing speech.

To Sandy’s chagrin, Mrs. Rittenhouse stopped her speech and called over toward them, “I say. Is there anything the matter. Is someone choking on something and in need to have the Hemlock Maneuver? I am trained to render assistance. Somebody waive a hand if I am needed, please?”

Bud stood up. “No, Mrs. Rittenhouse. Nobody is in need of a *Hemlock* over here. I sincerely apologize for my tablemates making a disturbance. Go ahead with your talk, please.”

Both Sandy and Bashalli stared daggers at the dark-haired flier and Tom hid a smile behind his napkin.

Five minutes later, with her speech finished, the orchestra struck up the first number of the evening and Tom and Bud whisked their dates out onto the dance floor.

Ten minutes later, the little ‘distur-Bud-ance’ as Sandy liked to call such things, was forgotten.

Just after midnight, Tom dropped Bashalli off at her house. “You were the prettiest woman there,” he told her and received a lingering kiss for his compliment.

The following morning, even though it was Saturday, both of the Swift men headed to Enterprises and their own projects.

For his part, Tom pulled up the designs for an incredible new space ship that he hoped to build in the next year or two. Capable of interstellar travel at near light speed, it would be a totally robotic ship that used repelatrions to get up to high speed quickly, switching over to a hydrogen plasma stream rocket to increase speed and to travel under power across the vast darkness between stars.

His hope was to send it on an exploratory voyage to Proxima Centauri. If he could get things right, the four-point-two light year trip could be made in just about five-point-six years—the last year

would be spent slowing down enough to use that star's gravity to boomerang back toward our own little solar system.

The red dwarf star probably didn't host a hospitable planet, but he hoped to be able to gather enough data during the full year the ship would make its swing around the system to keep Earth scientists busy for decades to come. And, that would include using a new device he had been hoping to create—that worked almost exactly the opposite of a repelatron—to capture and pull in numerous pieces of space debris to bring back for study.

Three hours later he hit a dead end and decided to set things aside. As he sat back in his chair he pondered what to do about the missing Pluto situation. It bothered him. Not so much about the possible ramifications centuries down the road, but the mystery of the disappearance.

In truth, he thought, several well-known planetary scientists were probably quite happy with Pluto having gone away. The ongoing debate regarding its demotion from full-fledged planet still smoldered in some people's hearts and minds. With it being gone, the questions and debates now became moot.

"I wish our space friends would send me some info, Bud," he told his friend as they sat having a late lunch in the company cafeteria. "If their Masters did take it, then why? I thought that we had made friends with them, or at least their leader, Garl, by helping to get our friends down here finally."

"You're not thinking that they might be setting thing up to send Pluto racing back in to smash into us?" Bud asked, now looking alarmed. "Sort of like that Red Dwarf show a number of years back where they played a game of billiards with planets."

Tom looked at Bud and slowly shook his head. "Oh, the things you watch on that nostalgia channel. But, no. I very much doubt that anyone is going to use Pluto as some planetary cue ball. If they did steal it, it must have some significance to them. Why not have their minions travel out from Mars to get whatever it is they want?"

Bud now looked very serious as he asked, "Tom, what if they did take it and plan to use it against us? What *can* we do?"

Tom could see the sincerity in Bud's face, so he tried to give him an honest answer. "Bud, if they could steal Pluto and get it totally outside of where we can even look for it, then I doubt if there is anything we might do if they toss it back our way."

They sat in silence until Bud excused himself to go call Sandy. Tom understood what Bud must be feeling and he headed to his own office to make a call to Bashalli.

Afterward, he sat in front of his computer making notes on

anything he believed might be accomplished in case of the worst. Short of ringing the solar system with nuclear warheads, there was little that might be accomplished if a planetary body was being used as an offensive weapon. Even the thought of a ring of weapons made him realize how ridiculous that was. Who said a threat would come from the same galactic plane as the planets—except there was no single plane—circled around the sun?

His computer beeped and a message began to appear:

**Hey, Brainbox. Collections here.**

**Long time, no type. We need  
to know what you know.**

**First time we are outside the  
loop. Is the missing object  
really gone, or is it in hiding?**

**You do this?**

It was a huge surprise to Tom. More than a full year had gone past since he last was contacted by the person or group who called themselves Collections or the Taxman. On several occasions they had interceded on his behalf and helped him. Somehow they could take control of his computer, knew practically everything, and were kind of smart and sassy about how they stated things.

This message read differently. Tom could tell they were in the dark and serious about what he might know. He typed back:

Hi. I'm in the dark as well.

Oh, and nice to hear from you  
after all these months. I'm  
waiting for info from our Mars  
friends. We sent out a probe—

Suddenly his keyboard stopped responding to his fingers. The screen started showing another message.

**Yeah. We know. I have the  
reports here. Nada. Right?**

**No names but our Big  
Gouda needs to know if we  
are in deep stuff, or what.**

**So... what?**

I'll assume that it is biggest Gouda

of the bunch. All I can tell you is that it may have been stolen or even borrowed. I don't know why so don't ask.

It may be back or gone forever, so don't ask. How do I get to you if I do find out something? You usually do not answer me.

Tom really didn't expect an answer to that. Communication was always initiated by "Taxman" and never the other way around. There had been no rhyme or reason in the past to when they contacted him.

At times when Tom would have welcomed their assistance or guidance, they absolutely refused to get involved. At other times, such as just now, they popped up without any notification.

The one constant was that Tom had never been able to initiate contact.

He was in for a shock.

Copy this.

Ctl-Alt-Space

+

Ctl-Shift-M

+

Alt-Shift-%

+

Return Return Return

Hope to hear soon. Oh, and above will work once. Just. YTDAAW. Ciao!

Tom copied the sequence and was not at all surprised when his screen soon went blank, then came back up with none of the conversation still visible.

This was something he believed needed discussing with his father, so he left the office and headed to the Administration building. He was surprised to see that Munford Trent, their

secretary, was not at his desk. But, after looking at his watch Tom realized that it was well past quitting time.

He turned to the large door to the office and noticed a note taped to it. It was folded once with the visible side simply stating:

*Son. Read this.*

Inside, the note read:

*Tom,*

*I have to go down to Washington DC this evening and won't be back until around midnight. Apologize to your mother for me but there is some sort of trouble brewing, and I've been ordered to make an immediate appearance, by the President himself!*





## CHAPTER 7 /

### AT HELIUM CITY

“I NEED YOU and Bud to go down to Helium City for me,” Mr. Swift told Tom at breakfast the following morning. “Peter Crumwald, our plant manager, sent me a rather disturbing and cryptic note yesterday.” He looked at his son and shook his head slowly. “I’m afraid it might impact that interstellar ship you started designing last month.”

Tom swallowed his latest bite of cereal and look at his father with curiosity.

The ship Damon Swift mentioned—another of Tom’s ‘Built it someday’ designs—was still in the pipe dream stage. It was a four or five man ship capable, in theory, of piercing through the space/time continuum and traveling to Earth’s closest solar neighbors in a matter of just hours. One of the things it would rely on was equipment to generate a powerful negative electron field bigger than the ship, which meant working at temperatures of close to absolute zero.

And, that meant the need for a huge amount of the absolutely pure helium supplied by the undersea wells first discovered by Tom and Bud.

“What does the message say, Dad?” Tom ventured carefully.

Pulling a half sheet of paper out from his suit jacket’s inner pocket, Mr. Swift unfolded it and read: “Damon. Disturbing occurrences at HC. Purity down. Ditto pressure and output. Unsure of reasons; don’t want to contemplate end results. Thoughts?”

He refolded the paper and returned it to his pocket. “It doesn’t sound encouraging, Son.”

Sandy cleared her throat and spoke. “Daddy? If the wells down there are petering out, what’s going to happen to things like that new medical scanner at Shopton General Hospital? I’ve read that it needs a lot of helium to keep everything inside cool and working.”

“That’s right, Sandy,” he replied. “The magnetic field used in that scanner, and a thousand others like it around the country—nearly four thousand in the free world and growing every week—need to be kept so cold inside that if you were accidentally exposed to the inner workings, you’d almost instantly freeze to death!”

Sandy looked shocked at that bit of news. “Gee, Daddy. I just thought that they used a little to maybe keep a circuit board or two cool.”

“Actually, San,” Tom said, causing her head to turn quickly and her ponytail to swing around and brush across her face, “the circuit boards get some residual cooling from the liquid helium jacket around the giant magnets, but those massive core magnets generate enough heat to make them practically useless if they aren’t kept at close to a specific temperature range.”

He looked over at his father. “Do you think they could substitute liquid nitrogen?”

Mr. Swift shook his head. “I’m not certain, but I seem to recall that the liquid helium is used to keep an inert cooling liquid chilled at just the correct temperature. Nitrogen would possibly not get that liquid cold enough and that would spell disaster for the equipment.”

“Oh,” Sandy said looking back and forth between her brother and father. “What’s the temperature difference?”

Together they chimed, “About one hundred thirty degrees.”

Grinning, Tom added, “Yeah. I didn’t think about that.” He turned to his sister saying, “Nitrogen liquefies at about minus three hundred twenty degrees Fahrenheit and helium does it at minus four-fifty-two. A little more than one hundred thirty degrees.”

Damon nodded. “Anyway, Tom, I need you to get down there, today if possible, and find out what the real situation is.”

On his way in to work, Tom considered many possibilities he and Bud might find once they arrived at the undersea mines. The one he hoped they would *not* find was that the supply of helium from the mines was running out. That would spell disaster all around the world and place additional strains on the deep land-locked mines under the Great Plains in the U.S.

Once he parked in the Administration lot, he TeleVoc’d Bud. “How about a little jaunt to the bottom of the sea, flyboy?”

“Mermaid search?”

“Right. And just as soon as I call Sandy and tell her that you’re looking for a little undersea... uh... friendship, I’ll pick up the pieces of your shattered body and we’ll go down to Helium City.”

Bud sucked in a deep breath that even the TeleVoc picked up and transmitted. “Right. Uh, about that little call to my dearest love, your beautiful sister, Sandy...”

Tom laughed. “Not to worry.” He gave Bud a brief explanation of what they needed to ascertain once they arrived. “Meet me at The Barn in an hour.”

The Barn was an open-sided hangar frequently used for assembly of Swift Enterprises prototypes, and was the home of

Tom's favorite jet, the Toad. He had been flying the prototype aircraft since it had been built. It remained Enterprises' test bed for improvements and changed from time to time, so almost every flight was a test flight. Recently, it had been outfitted with two new engine pods. Each pod contained a pair of smaller turbine engines, side-by-side, in a low-profile case.

So far, the change had resulted in a slight increase in speed and a slight decrease in fuel consumption in four-engine flight. What it did provide was the ability to shut down the two outer engines once cruising altitude was reached providing much better fuel economy than any other jet in its class.

After checking his mail and email, Tom downloaded his latest project notes into his tablet computer, then headed for his meeting with his best friend.

They flew out to Fearing Island where a small seacopter was waiting for them.

Two hours later they docked at position number three at Helium City. All five other dock/airlocks were occupied; two held the emergency evacuation jetmarines always kept on site, one held the U.S. Navy submarine assigned for protection of the valuable location, and the final one had an older submarine with markings Tom recognized as belonging to The Atlas Shipping Corporation, an international conglomerate that served as the primary transportation for European distribution of the liquefied gas.

Peter Crumwald was a youthful yet gray-haired man of about fifty. A veritable giant standing over six feet seven inches tall, he had once been a professional basketball player. A career-ending injury at the age of just twenty-five sent him back to college where a triple Doctorate awaited him. Now a leading expert in gas extraction, refinement, and—as a sideline—a medical degree, he shook Tom and Bud's hands and suggested they head for his office.

As they sat down, Tom asked, "What did your message to dad *really* mean?"

Crumwald took a deep breath and looked Tom directly in the eyes. "It means, Tom, that the wells are almost dry. We've been relying on the pressure of the gas to force it up and into our holding tanks for a couple years. It was all going quite well until last month.

"Actually, I need to step back a year to when I believe the trouble began."

"What kind of trouble?" Bud asked, leaning forward.

"That was when our very own Government signed an agreement to increase the allotted gas to China and Eastern Europe. Until that point, all our measurements showed that we had a possible fifteen-

year supply. Someone convinced the Senate Committee for Resource Exploitation—” he snorted. “*Exploitation* is right! So, they agreed to let the U.N. ship out about double the supply that had been initially agreed to, in spite of my warnings to them that increased extraction would harm our ability to preserve a long-lasting supply.”

Tom pursed his lips. “So, you started drawing out more than you felt comfortable about and now the well is running dry?”

“I didn’t want to and stalled as long as I could. But the U.N. oversight committee sent down a really nasty piece of work to get things moving. That was ten months ago. I know this guy’s son, and he’s a nice guy, but this elder Samson is a cutthroat, backstabbing and double-dealing jerk.” He looked sadly at them. “And, Samson’s here to take my place. I’ve been *asked* to resign.”

“What? *Atlas Samson*? We have the same Samson that owns the shipping company take over down here?” Tom asked, eyebrows raised. “That sounds a lot like conflict of interest.”

“More like compound of personal interest,” Peter said in disgust. “He always delivers about five percent less than he takes onboard and constantly blames it on leakage, but my guess is he’s siphoning it off and selling it black market. And now, the U.N. is handing the coyote the keys to the hen house, so to speak. And, making certain I’m gone to boot!”

“But, you were selected by Tom’s dad,” Bud protested. “That ought to count for something. Can’t you just tell him to get out? Do they think that he can magically make more helium appear? Tom?” Bud spun to face his friend who was muttering to himself.

He looked up and said, “Dad may have been right. My interstellar ship may never get off the ground. I need almost a month’s output. A month’s *normal* output. But, that’s my problem. Now we have to find a way to keep this Samson guy from just grabbing all that’s left and then running.”

Crumwald shook his head. “Obviously, I feel miserable about this, since it was you Swifts who discovered the well in the first place. And, you’ve had first dibs on whatever helium you’ve needed.

“But the truth is that I report to the United Nations and they have kept a gag order on me for all this time.” His eyes drifted down to his desktop. Without looking back up, he added, “I’ve already been taken to task for sending your father that note. In fact, I received notice...” he slid over a page to Tom, “...that Samson tapped into my email and then sent the U.N. a copy. I’m being replaced because of it!”

Tom read the three-sentence message out loud:

“In contradiction of expressed orders, you have contacted Swift Enterprises regarding confidential information. Per your contract, this is unacceptable. You will be replaced on the 20th of the month at which time your employment is terminated.”

Tom looked up at the sad and worried man. “But, that’s today!”

Nodding, Crumwald said, “Right. And that’s not the worst of it. You will have seen the Atlas Shipping sub out there.”

Tom and Bud nodded in unison.

“Well, the senior Mr. Samson came down in that. He is personally taking command of the city until the permanent replacement is named.”

A knock on the door startled all three men. “Yeah,” Peter called out.

The door opened and an older man with shockingly—and obviously heavily dyed—black hair entered. He was chomping on an unlit cigar. “Time to vacate, Crumwald,” he sneered. “Up and out with your little friends. That’s as in right now!” he practically bellowed.

Peter didn’t stand up. In a level voice he replied, “It is just eleven, Samson. You don’t take control until twelve. Until that time, kindly get the hell out of *my* office!”

Samson seemed ready to explode until Peter stood up and leaned over the desk. He towered over the heavy older man by almost eighteen inches. Without saying anything else or making any menacing moves, the effect was immediate and shocking. Samson cringed, holding his hands up next to his face as if anticipating a blow that would never come.

As he quickly left the room, he called, out, “You’ll regret that!”

Peter, Tom and Bud looked at each other for a few seconds and then broke out laughing. They continued for almost a half-minute before Crumwald sobered.

“Oh, god... I needed that!” he exclaimed. “Well, I guess that’s about the final nail in my coffin. Any chance of hitching a ride back to the mainland with you two?”

Tom readily agreed. “Is there anything you need to do before we leave?” he inquired.

“I just have to talk to a couple people. They’ll keep a tight watch on Samson and his cronies. I’ve got a feeling that his fingers are all over this and that they’re waiting to grasp a bunch of money before things totally dry.” He looked at Tom. “I just pray that it’s the well that dies, not any of the fine folks down here!”

His words made a shiver run down Bud's spine.

At precisely noon Tom, Bud and Peter walked across the open square and toward the waiting jetmarine. A crowd of people had gathered nearby. Once they spotted Peter, all talking ceased, and a round of applause broke out. Peter acknowledged it with a few nods to certain individuals and a waive of his hand.

Standing in front of the airlock to the sub, he turned and held up both hands. The group stopped clapping.

"I want to thank all of you fine people for your months and, in some cases, years of exemplary service and your friendship. Keep doing what you all do best. I hope to see you all at some sort of reunion someday. Goodbye!"

With that he and the boys entered the airlock, cycled through and climbed aboard the jetmarine.

Three minutes later they detached and headed toward the surface.

"Boy, I hope they will all be safe even with the pirate down there," Peter commented as they neared the surface.

To everyone's surprise, Mr. Swift was waiting at the dock on Fearing Island. He warmly greeted Peter Crumwald with a handshake and a bear hug.

"I feel miserable about all this, Pete," Damon Swift said. "I've place several calls to people who know better than the idiots in charge of things. We'll see what happens. In the mean time I have arranged for you to take a little vacation in Hawaii to soak up some sun, followed by heading back to Georgetown University and a teaching position in undersea mining. At least, I hope you'll take the job. They need you and it seems right up your alley"

"I'd be honored, Damon. But, about that vacation... if it's all the same to you, I'd like to just go spend a couple days with my daughter out in Southern Oregon. Do a little hiking, celebrate Christmas, tell a few tall tales around the fire and maybe get in some skiing. That okay?"

Damon Swift laughed. "Take whatever time you need. They don't need you at the school until two weeks from yesterday!"

Having hitched a ride out on a supply jet, Mr. Swift accompanied Tom, Bud and Peter in the Toad, heading back to Enterprises.

"Is it anything I can take off your hands, Dad?" Tom asked as he entered their shared office the following morning. "No more news on Pluto, and I'm thinking that we might just be beating the proverbial dead horse by trying to do anything else right now. So,

what have you got for me?”

“Well... that is difficult to answer. I’m tunnel-visioned on one project right now. You remember a few weeks back when we got the news that the Swift Mark IV Mini-reactor received final approval?”

Tom nodded. “Sure. That’s your newest model that will be manufactured out at The Citadel and transported to a site, dug down into the ground and surrounded by cooling wells going down a thousand feet. Right?”

“Correct. And, with no above ground components and only a control building dug into the ground and set a quarter mile away, a team of just two people can run one and provide electricity for about eight thousand homes.”

“So, the NRC isn’t going to give us any hassles over non-existent safety issues?”

“No. They finally understood that once the reactor and shielding are embedded in tomasite and then buried, that a twenty-foot reinforced concrete cap will cover it all and even if the reactor were to go into melt-down, there is zero chance of immediate radiation leakage. But, that is not the issue.”

“I’m sorry. I interrupted you. So, what is the problem?” Tom asked, now a little curious.

“The problem lies in the cooling wells. My design calls for them to circulate a liquid cooling medium around the core. It would travel through the cooling system and into a massive heat exchanger where all the heat will be removed for use in driving the closed-loop steam generator system. It leaves the exchanger back at fairly high temperatures and goes to the deepest part of the wells to cool and stay until it is needed. It re-compresses as it cools and goes around again.”

Tom leaned forward as his father took a pause. “The problem...?”

“The problem is that the cooling liquid everything is design to work with is—”

“Liquid helium!” exclaimed Tom as he realized where this was going.

“Right. And, with the proliferation of MRI devices for hospitals and clinics around the world, and the problems we now know to be going on at Helium City, I just received notification that our allotment has been cut. At present rates of output, I can only get enough pure liquid helium for one of this new reactor. Period!”

Tom gave a low whistle. “Ouch! So, are there any alternatives?”

Mr. Swift gave an unenthusiastic nod. “Sure. But they put us

back at about square five in the twenty square approval line. I can go for liquid sodium cooling, but that has a problem with moving the distances we want. Tends to stiffen up a bit and doesn't want to move freely without a lot of additional heating and pumping equipment. Ditto lead-bismuth, and don't get me started on the environmentalists reacting when you mention lead or mercury cooling systems!"

Tom thought for a moment. "What about heavy water coolant? I've read about reactors that use it both for generating steam as well as cooling. Or, glycol?"

Now Damon had to shake his head. "No. Unfortunately, each has limitations that don't fit into this design without massive modifications. I'm afraid that I didn't do my homework when I came up with the design, I should have checked with Helium City to ensure that there would be enough for us to build, oh... ten to twelve of these a year." He let out a sigh and leaned back in his chair.

"Would Peter have been able to tell you if you had contacted him? I mean, what with the gag order and all."

Damon steepled his fingers and brought the tips up under his chin. "Possibly not. He might have been able to give me a very feint hint, but I might have missed it. No, I'm afraid that it is either find an alternate source of relatively pure liquid helium, or go back to the drawing board."

Five minutes later, and with no other conversation between them in the meantime, Tom got up and left the office.

Back at his underground lab, he pulled out his designs for both the manned and unmanned spaceships. Something was nagging at him. A tiny idea that actually, now that he thought about it, seemed more a premonition. He hoped that looking over the details of the ships might help.

Two hours later he decided that this wasn't going anywhere so he closed out the design program and stretched. Tom began thinking back to the conversation he and his father had regarding the cooling of the new reactor system. Muttering, "Might as well," he decided to do a little research. The chances were fairly high that he would simply rediscover exactly what his father already had, but there was an outside chance he might find or think of some new approach.

He made copious notes regarding different cooling systems. As he investigated the possibilities he could see why his father had discounted liquid metals. Not only were they difficult to work with in larger systems, they were an environmental nightmare when the time came to decommission the reactor or to work on the cooling



system. Some were ultra-corrosive unless used inside of coated piping—even at that, the pipes would need to be replaced at least twice during the serviceable life of the reactor.

Not a good choice.

Some seemingly had great possibility, but on closer examination might not stand up to the high temperatures.

Some were relatively safe yet not efficient enough, and many were deadly.

The one possibility that he did find, in an obscure journal from Japan, called for the use of a combination of Silicone and Fluorocarbon oils under high pressure. The author of the piece had built an experimental reactor three years earlier to test such a cooling system. As noted in the article, the cost of the exotic oils was almost prohibitive, even in the relatively short loop of his system. At the end of the article was a chart of temperatures and operating indicators.

That was where Tom had to shake his head and go looking elsewhere. While the oils might be fine for cooling, they would never be able to be used to create the necessary steam for the generator; they gave off their heat far too quickly... all within a few feet after exiting the reactor jacket. It would be impossible to heat enough water in the short space of time before the oils dropped to too low a temperature.

Before heading home he glanced at a small reference in a previous article. It was one of those, “You might see something usable by visiting X website,” sort of references. He typed in the first web address.

After five screens of information that turned out to be basically useless, he found the bit he was looking for.

“Well, well, well,” he muttered to himself five minutes later. “Nano-coolant.” As he re-read the three screens of material he could envision what the article was describing. A coolant liquid such as heavy water or ethylene glycol was super saturated with nano particle—or even better, the author had said, while lamenting that it was *theoretically* possible, but currently impractical—consisting of microscopic nano-rods of a material such as titanium dioxide, silica or even silver and/or copper. These would, according to his unpublished findings, raise the heat transfer capability of the liquid by as much as three hundred percent.

Further, where desired, the nano-rods could retain the heat for a longer period of time and then be induced to release it—via a combination of heat exchange and magnetic induction—in great quantities at the point where it would be most efficient.

To top things off—and this is what intrigued Tom the most—it never needed to be used in a temperature range any lower than about thirty-four degrees Fahrenheit even though it could easily reach temperatures as high as eleven hundred degrees and remain in liquid state so long as it was under high pressure.

Tom made a note of the article URL on his tablet computer and headed back to the large, shared office to see if his father was ready to go. Even though they had taken separate vehicles in, they sometimes shared a ride home.

## CHAPTER 8 /

### HOW DO YOU FIND WHAT ISN'T THERE?

MR. SWIFT listened to Tom's description of the information on the way home. He nodded several times and made a "Hmmm..." sound twice. By the time they pulled into the Swift's driveway he was smiling.

"That article was published by a woman named Wonda M. Fits. Right?"

Tom was shocked, even though he shouldn't be. Mr. Swift generally read just about anything published. *Wait a second*, Tom thought. *This is supposed to be a previously unpublished work. How did dad know?*

"What gives? How did you know her name?"

"Wait until we get inside. You used to be pretty good at anagrams. I'll let you figure it out." And, with a smile at his son, Damon Swift would say nothing further.

With barely any acknowledgement of his mother's greeting, Tom raced to his father's study and pulled a pad of paper off the desk. He sat in the easy chair on the opposite wall and wrote down the name.

Three minutes later as he mentally rearranged them, everything fell into place. He wrote the answer:

**WONDA M FITS = DAMON SWIFT**

He walked into the living room and looked pointedly at his father. "And?" he asked.

Mr. Swift chuckled. "That was from a paper I wrote back in college, Tom. My professor told me that he could no longer take my word for some of the more obscure research and reference works I used to quote and that he could never locate, so he took me to task and insisted that I produce at least one paper dealing with reactors that included an original research paper by a separate research organization. I wrote that piece—it was thirty pages long, as I recall—to justify a conclusion I was making on reactor coolants and the viability of inland reactors with no native water supply."

"Your father received a special award for his paper, Tom," Anne Swift said with pride.

"Yes, and it wasn't until ten years later that old Dr. Nathan asked me where I had dug that paper up. He had been trying, off and on, to locate the original for all that time."

“Did you admit to it?” Tom asked.

Mr. Swift nodded. “First, I made him promise that he would not retroactively take away my diploma. He agreed, so I told him. He clapped me on the shoulder and reached into his briefcase and handed me a newspaper from India. There, in the Corporations and Industry section was an article about a young man who had just constructed a small reactor using a cooling method he called ‘nanro-rod suspension’ coolant. He quoted that research article as his source of inspiration. Mine was originally called a micro-particle suspension coolant. I’m not sure who changed that to ‘nano’ but at least they kept the pseudonym.”

“Could it work?” Tom asked.

His father nodded, very slowly. “You know, it just might be one avenue to explore. It would require a fission source a bit safer than Uranium, though.”

After dinner, he and Tom sat discussing the Pluto situation.

“So, what’s next, Tom? That’s assuming that our space friends don’t come through with the full details. I’ve been getting push back from several agencies down in Washington regarding this. A lot of people want answers and they aren’t taking my, ‘We didn’t find anything out there and that’s probably a good thing,’ for an answer.” He looked at Tom in a way that spoke more than mere words.

“Well, unfortunately we got just about zero data from the first probe. I’m not sure what might have happened, but one minute we’re receiving good telemetry telling us it is nearing its stopping point, and the next we get acceleration for about five hours and then nothing!”

Mr. Swift looked serious as he asked, “Do you think it is still there, or destroyed by something we can’t detect?”

“We don’t have enough information to even hazard a guess. It looks like I need to go out there to see for myself, doesn’t it?” Tom stated.

By the following Monday he was hot on the project having decided that a new ship was going to be required. The good, old, *Challenger* might be capable of making the trip, but he computed that it would take months to go out and back, when he really had weeks.

That brought up a whole new problem. What to build and how long was that going to take? And, the answers he came up with were: he didn’t know; and, far too long.

Perhaps, he pondered, if I can add some more powerful drive

components to *Challenger*—maybe even the plasma drive I’ve been toying with for my interstellar probe—we can get up enough constant G acceleration to make the round trip in less than a month.

It was an ambitious plan and one that began requiring enormous resources.

Mr. Swift pushed and pulled and knocked at the doors of all the Federal agencies and Governmental bodies who were demanding action, and received the necessary funding assurances. He was shocked at how relatively easy it had been until Anne Swift asked if it might be due to panic in the Government.

“People throw money around at times like this rather than appear to be doing nothing,” she suggested.

What Tom came up with would make any rocket engineer cringe, but he knew that it would work.

Basically, the *Challenger* would be taken into orbit where it would mate with a new lower section, and be outfitted with a surrounding set of tanks for the large amount of fuel necessary to make the trip.

That lower pod would be the most powerful plasma drive ever built. By utilizing liquid methane Tom knew that he could break the carbon and hydrogen atoms apart and use them both to power the plasma drive. The real plus would come with the ability to detach the *Challenger* from the base unit and to land on any of the larger of Uranus’ moons where ample supplies of methane would be pumped aboard for the trip home.

If push came to shove, Uranus itself was mostly considered to be built from solid and liquid methane along with hydrogen and helium.

Tom momentarily toyed with the idea of bringing along a spare tank or two to try to fill with helium but soon realized that it would be a practical impossibility. It most definitely would not be just sitting there in separate pools.

Within three weeks he abandoned the entire idea. It was too clumsy, too kluged and too dangerous. Besides, the *Challenger* might not withstand the stresses involved. It had been engineered for the more sedate repelatron drive. He turned his efforts to another avenue.

Half of that time Bud spent training five new men and three women who would be part of the replacement crew for the Outpost in Space. They would be new permanent additions to the crew replacing six people who had decided to take transfers ‘dirtside’ in order to spend more time with their families. Plus the station was

getting two brand new positions to enhance the space prober department that now was operating almost 24-hours a day, 7-days a week.

The other half he had been involved in flight tests of one of Tom's more odd flying machines.

"Hey, skipper?"

Tom turned in time to see Bud striding across the tarmac and into The Barn's west end as he was inserting a circuit card into one of the new booster rockets he planned to be using soon. "Hey right back at you, flyboy." You've been gone long enough that I got used to not having you here to banter with. What's up?"

Bud's face scrunched up into a look of confusion mixed with curiosity. "Ah, I can tell you all about that tonight. I dropped by to let you know the girls have an evening of fine dining, a movie and one of those romantic 'we'll go this way and you two go that way' walks planned. Sandy says to tell you that your appearance is demanded at Casa Swift at precisely six. But, that's not what's on my mind right now."

"Okay," Tom told him. "Spill."

"I was just over at the Construction Company talking to Jake Aturian about a few little fixes I'd love to see on the latest model of the Skeeter when my eye got caught on something. Something really weird."

Tom did his best to hide the grin that was forming on his face. He had a pretty good idea what Bud had seen, but he wanted the man to tell him and give his honest opinion about it.

"Yeah. Jake and his people have lots of interesting stuff over there. What is it that you saw?"

Bud closed his eyes. "We're gonna play it this way?" he inquired.

Nodding, Tom told him, "Sure. Why not? So, I'll ask again... what was it you saw that raised your curiosity level?"

"That giant basketball trophy! That one hundred and ninety-foot Doric column with the giant sphere on the end. That major shaft with the ball that has about a gazillion little antennas all over it. That thing!"

Tom nodded slowly and deliberately. "Oh. That's just the IMP." He turned his back to his friend and pretended to go back to work with the assembly he had been working on before Bud's arrival.

From behind him came an exasperated shriek and a very loud groan.

"Imp? IMP? What the blue blazes is an imp?"

Tom casually looked over his shoulder. “That’s my new Interspatial Mass Probe. Just a little thing I cooked up with Hank Sterling a few weeks back. While you were playing astronaut.”

Bud let out another groan and Tom heard him pull over a stool. He turned back to Bud and smiled. “Okay. You want the detailed stuff or the ‘I don’t want you to have to scratch your pretty little head over this’ explanation.”

Blinking several times, the flier finally replied, “Give it to me with both barrels. Just be sure to use the light-weight ammo and not the heavy artillery.”

Tom reached over and pulled up a second stool, perched on it and rubbed his jaw for a few seconds.

“Alright. We can’t build the exploration vehicle I want in just a few weeks or month we have left before we need to get more information about our missing planet. Our planned trip out there in the *Challenger* was going to be really hard on everyone—I knew that from day one—and I kinda over-promised on the old girl. She is being overhauled as we speak and won’t be flight worthy for another month. Doc Simpson tells me that if we’re going out manned, we need to have a whole new neutral buoyancy tank system for each man. The pressures will be too great otherwise.”

Bud looked curious, and then asked, “So, what do we do in the meantime? I’m guessing that the flight out is just delayed and not cancelled. What now?”

Tom pointed vaguely toward the distant Swift Construction Company. “That ball on a giant plinth you saw is a new probe. It will be capable of getting out much faster than the first one and will have a massive instrument package. This,” he said turning back to the object the had been working on, “is one of eight booster pods it’ll use.”

Giving his friend a grin, Bud said, “So, you’re going to strap on a bunch of rockets and light the fuse.”

With a shake of his head, Tom replied, “No. Not exactly. We’ll use two—each filled with a repelatron and one of our smaller atomic power pods—to help boost the large rocket up and through about five hundred miles. Up to that point the main rocket will use a large solid fuel motor. When that burns out a new and powerful repelatron will shove the rocket case out and spring down and out the back. Once the big repelatron in the first stage and the booster units drain their power pods, they drop away and give themselves a shove back into high Earth orbit. We’ll go recover them later.”

“Uh... right. But, when the first stage drops, won’t that also take away the other boosters?”

“No. She umbrellas.”

Bud was dumbstruck. “She, *whats?*”

Tom laughed. “The other boosters are mounted on swing arms attached to the larger upper stage. In order that they not interfere with, or get damaged by, the big plasma engine in the second stage, they swing out and up like ribs on an umbrella!”

The upper stage, he explained, held a powerful plasma propulsion engine mounted in the very rear, and the rest—almost ninety percent—held its fuel. After that was the capsule with all the instruments and transmitters Tom could cram into it.

“It will continue to accelerate at a constant six point five Gs. This will see it racing past Mars’ orbit in under fifteen hours and have it at its half-way turnaround point just seven days later.”

“What about the final six boosters? The umbrella ones.”

“Those are what help us get there faster. You see, the plasma drive can only slow the rocket down as quickly as it accelerates it. With the repelatron boost at the beginning, we would have to do the flip over at about the forty-six percent point so the plasma can slow it enough the rest of the trip. That little difference would add a full day to the trip. What we’ll do is perform the flip one full day past midpoint, and then fire each set of boosters at specific intervals well after the turn-over and that will give us even quicker slow-down and earlier arrival.”

He went over the words ‘quicker slow’ in his mind and tried to find a better description than that, but couldn’t. So, he shrugged.

Bud smiled. “Sounds great. Is she all ready?”

“We still have some final work to do on the instrument package, but launch is just a week off. I keep thinking I’m missing something, though.”

“How long did it take that genius brain of yours to come up with the right sort of instruments and detectors?”

Tom let out a single chuckle. “We already had them. Have had them for a month. I was going to pack them into *Challenger* before we went on our little vacation trip.”

Bud nodded thoughtfully. “So, until *Challenger* is all better, we pack up everything into the *USS Trophy*. Right?”

Tom shook his head and groaned at Bud’s on-the-spot nickname. “Yes. The new probe takes off—”

“—then, it does the flippy thing facing back to Earth and decelerates at the same constant G force. By the time it gets to a standstill—” he looked to see if Tom was going to correct him, “—



it's there!" he finished.

Tom smiled and nodded.

"At last, I understand some of your science... uh, that is if I'm correct. Am I?"

Tom laughed at his friend. "Bud Barclay, we'll make a junior scientist or physicist out of you yet. Of course you're right."

Bud's brow furrowed. "So, how fast *will* it fly and get this giant stick out there?"

"That depends on when we fire the mid-flight boosters to decelerate. Also, whether or not we just go for broke and eat all the fuel she can carry just getting out there. It's going to be a balancing act between how much fuel we can carry, and whether we want to get the probe back."

"Oh-h-h-h," Bud said, realizing what Tom meant. "*Do* we want it back?"

With a slightly rueful chuckle Tom replied, "Well, dad and the accountants certainly would like me to get it back so it can be used again. Something about being more cost effective. They're right. I spend almost seventy percent of the R&D budget at Enterprises and I'm just one of almost one hundred people working on new projects. Dad would like me to be as fiscally responsible as possible."

"Bummer, and I was just going to ask for a solid gold pony. I'll have to marry into money." Bud sighed, and then said, "That means I have to be satisfied with being the sole and hopefully more frequent date of the only daughter of the head man." He grinned broadly. "But, enough about me. Tell me more about this new instrument bundle and getting it out and back."

"I've just about figured out the perfect balance of everything. I intend to fly it out there ASAP, but let it come back more slowly. We'll give it a good nudge in this direction using some of the left-over fuel and set it on an intercept course with Earth, but it won't get back for about two years. We'll keep enough fuel to slow it down and put it into orbit so we can go up and retrieve it."

He began to call up the computations on his tablet computer to show them to the dark haired flyer, but Bud backed away saying, "Don't push this learnin' thing to far, Tom. I'm still just a glorified high school football player and stick jockey. Not a brain trust like you."

Tom patted Bud on the shoulder. "You're right. You're only one of the first three people to go into orbit in a private space ship, a skilled astronaut at the age of eighteen, jungle explorer, pilot of—at

my last count—twenty-seven different aircraft including the largest jet in existence, and, if Sandy has her way, my future brother-in-law. Just you average sawdust-brained Joe, huh?”

Bud blushed slightly. Deep inside he knew that he was more accomplished and at a higher level than just about anybody his age, except for Tom. But his innate sense of modesty—something that he hid well with his humor and sense of mischief—never let him admit it to others.

“Well, anyway, skipper. I’m off to fly, let me see... this would be aircraft type seven, Mark III.”

Now Tom’s brow furrowed as he sought to figure out what plane Bud might mean. “Uh, help me on this. What Mark III?”

“The newest Atomicar, silly. The one you had Hank redesign to be more modern and aerodynamic—even if it’s a little slower—and lighter. And in six exciting colors. Hank says that if he made a pink one we could call it the AtomiFemCar. Sandy would love it!”

Tom laughed. The new version of this old workhorse was meant for sale worldwide where it would compete with many private aircraft, or at least at that price range. Unlike an airplane or jet, the Atomicar could drive like a sports roadster, fly like a plane, and even float on or maneuver slightly under the surface of water. The Mark II had incorporated the ability to be used like a submarine down to depths of over three hundred feet.

This version could still dive, but just to about thirty feet, fly slower so that lesser experienced pilot/drivers didn’t get themselves into trouble, had a ceiling of just over six thousand feet, and could seat four, comfortably, or six slightly crowded.

“Well, have fun, Bud. Don’t let any of those rough boys whistle at you as you fly your girly car.”

“Ha-ha-ha. Funny. This one, I’ve been told, is painted gloss black with that super RADAR-reflective coating you came up with. That way the tower will always get a good fix on me. I asked Hank to paint flames along the sides, but he refused me. Oh, well!”

And with that, he was out the side of the Barn leaving Tom to go back to his work on the new booster.

That evening, the boys made good on their promise of an evening out with Sandy and Bashalli.

Tom told the girls about the probe. Sandy tapped him on the back of his left hand with her fork. “So, why,” she said around a mouthful of chicken, “do you jettison the repelatron boosters? Why not keep using them?”

“Well, three reasons. One, there isn’t going to be any room for

all the usual computer and element selection equipment. They'll be set to repel iron. Two, repelatrons have a limit on how fast they can push something. Once you reach that speed you don't accelerate more. The plasma drive kicks in just about at the top end of their capabilities and they would add nothing to the efforts or speed from that point. That's why the other boosters are solid rockets. And, three, we will have sucked about all the power out of the power pods by that time. It would take a week or more for them to slowly regenerate and be able to provide enough power to—"

The three others looked at Tom. He had suddenly frozen. Bashalli was about to ask if he was feeling all right when a big smile crossed Tom's face. He jumped up, kissed Sandy on the cheek and shouted, "Yes!"

Heads all over the restaurant turned in his direction. One man at a nearby table called over, "Can we assume that you just had an eureka moment, Mr. Swift?"

"You bet." Tom sat back down and lowered his voice. "Sandy's right. Why *am* I tossing off the repelatron pods? Even if it takes them a few weeks to get back up to power, why *not* bring them along" I'll have to recompute things to account for their mass, and build two more swing arms, but if I keep them attached I can use them to help get the rocket and probe back to Earth much faster."

He began to rattle off some of the things he needed to do, including coming up with a simple, small and lightweight mechanism to swivel and aim the emitters.

Five minutes later, Sandy poked his hand again. "Enough with the stream of conscious rocket stuff. Pay attention to Bashi while Bud adores me unconditionally!"

Two days later, and with two to spare before the intended launch, he completed work on the rocket Bud had nicknamed *The Big Candle*. Unlike any liquid-fueled rocket design, there were no external access points, no valves and no sockets with auto-close doors. The skin was smooth as wax except for the tiny sensor antennae Bud had spotted days earlier on the upper sphere. In fact, a new wax-like coating to reduce drag had been applied to the exterior the afternoon before. The bright orange round capsule on top did nothing but give it an even more candle-like appearance.

The only thing keeping it from looking even more like something you might find on a giant cake were the octet of eighteen-foot-long, three-foot-wide pods around the lower end. Tom had laughed when Bud and Arv had wheeled them over to The Barn to be attached. One pair was painted bright red, one pair bright blue, one neon green and the other was an almost incandescent yellow.

“Can’t have this thing going up looking less than festive!” Bud declared. “Besides, as long as it goes up the day after tomorrow, I want it to look good for the birthday girl.”

Tom froze with his hands hovering over the keyboard of the systems check computer. His mind raced. Whose birthday? Not Bash’s. That was three months ago. Sandy’s? Bud’s? His mother or father? Tom was stumped.

He straightened up and turned to look at his best friend. “Call me a chump and a fool, but I can’t think whose birthday it is supposed to be. Help?”

Bud and Arv both laughed. “Where’ve *you* been, skipper,” the large, square-jawed engineer and chief pattern maker for the company asked.

“Yeah, Tom. Use that giant noodle. What was born eight years ago the day after tomorrow. And, notice I said *what*, and not *who*.”

Tom rubbed his jaw, a sign that he was thinking hard on the matter. A minute later he looked back up at the two men who were having difficulty keeping from falling down laughing.

“How about if I changed the word ‘birthday’ to ‘anniversary.’ That any help?”

Then it hit him.

“Enterprises! Swift Enterprises is about to turn eight years old. That’s it, isn’t it?”

“Right. And, according to your dad, right after you and the team return from Fearing Island and the launch, there is going to be a company-wide party. Balloons, punch, a huge buffet and I hear Chow has come up with a ten-foot cake, complete with candles. Well, minus this one, of course,” Bud said tilting his head to the horizontal rocket.

Arv inquired, “When does it get shipped over, Tom?”

“Tonight. At four, we separate the two halves and they get trundled over to the loading bay for the *Super Queen*. We’ve rigged a special diagonal cradle for them to sit in, and that fits inside of one of the cargo pod holds with about three inches to spare.”

“Then, it’s into the belly of the beast and up, up and away...” Bud finished Tom’s answer.

“It will be unpacked tomorrow morning, reassembled, hoisted upright at the launch pad in the early afternoon and the rest of the day and evening will be devoted to systems checks and testing all the payload instruments. At exactly seven a.m. on Friday, it takes off. That way, and if everything goes according to plan, it will arrive at the halfway point the following Friday morning. Not much for

anybody to do while it's on the way out. Everything is fully automatic. We'll just ensure that the signal we get back at turnaround indicates success. After that, it's another week of waiting."

"Bud couldn't tell me so I'll ask the expert. How long is the probe going to be out there," Arv asked.

Tom chuckled. "This is a flight filled with twos, Arv. *Two* days to go to launch. One week and *two* hours to turnaround and one week *minus* twenty-two hours after that, arrival. Then, it stays on station for two days before it heads home. And, since Sandy helped me see that keeping the repelatron pods attached is a good thing, the trip back, although still pretty slow, will take just two-point-two months. Once we get inside the orbit of Neptune, we'll use it to shove against for a faster trip back."

Both men agreed that it was going to be easy to remember those sorts of figures.

Tom was about to give them a little tour of the entire rocket when his TeleVoc pin beeped. "Excuse me, guys." Tom tapped the pin attached to his shirt collar and began mouthing words. With the pin able to pick up and decipher jaw and mouth movements along with brainwaves, it immediately turned these into a signal that was translated at the other end and directly into the inner ear of the caller.

"Wait a minute while I tell Bud and Arv," he said aloud. Turning to them he said, "This is dad. He just got off the phone with Admiral Hopkins. You remember that piece of work, Atlas Samson, the U.N. insisted take Peter Crumwald's place as head of Helium City?"

They both nodded. It was practically legend of how the man the Swifts had hand-selected for command of the vitally important pure helium wells had been summarily dismissed. Just days later Samson had announced sweeping changes in how the wells would be used and how helium would be allotted. Since that day, Helium City had fallen farther and farther behind on deliveries.

Tom told the two, "That *jerk*, Samson? He was just found *dead in his office!*"



## CHAPTER 9 /

### DYING IS AN INCONVENIENCE

“DEAD?” Bud and Arv asked together.

“Hang on, guys. Dad? What else do we know?” He listened for a minute and mouthed a few comments back before finally tapping the pin to cut the call. “Ah. It wasn’t Atlas Samson after all. An interesting little turn of events in any case. There were three calls up from Helium City. The first one stated that that they had an accident and the guy Atlas Samson appointed to ‘manage’ the operation, was mortally injured. Then, they sent a revised message stating that he had been found dead with a gun on the floor next to his desk. That was retracted within minutes and another message sent saying that they had a murder on their hands.” Tom shrugged. “Who knows what one, if any, is the truth?”

Arv looked quizzically at Tom. “Wait. I thought it was this Samson guy who was in charge. When did he move out of the picture?”

“Just a week ago, according to dad. Atlas Samson notified the U.N. that he was unable to continue living and working down there and stated that he had appointed his number two man from his shipping company to be his manager by proxy. And, that Samson would maintain command but would do so from his offices in Algeria.”

“They agreed to that?”

“Actually, Arv, they did not. They told Mr. Samson that he was no longer needed and his contract was immediately terminated. I understand that he bluffed, blustered, threatened, but he finally disappeared. According to what dad just found out, this manager, a Belgian named Damian Goosens or something like that, had been frantically trying to contact Samson ever since and had been showing signs of a breakdown for a couple of days.”

Arv let out a little laugh that surprised both Tom and Bud. “Sorry, but my Scandinavian roots just popped up and I was translating the man’s name. Damien, as in the son of Satan, and Goosens, as in God. His parents had a very strange sense of humor.”

“What now?” Bud asked. “Isn’t this about the most inconvenient time to be having problems down there?”

Tom shrugged again. “Dad doesn’t know. His State Department contacts don’t know and quite possibly the U.N. oversight

committee doesn't either. One thing is certain. He has ordered a fleet of three jetmarines and a pair of seacoverters to go their immediately, and the *Sky Queen* will transport out the undelivered six of the new *SeaSpear* underwater drones we built for the British Navy. Admiral Hopkins is sending two more deep patrol submarines to circle the area."

Bud was puzzled. "Why all the security?"

"Dad says some odd and not necessarily good things have been happening down there and everyone wants to make certain the well remains protected."

Like the flying drones Tom developed for Fearing Island, Enterprises and The Citadel out in New Mexico, *SeaSpears* intercepted anything that came within range. They could emit sound signals designed to defeat any SONAR system, could deafen anyone swimming underwater and even shock them into submission. For any torpedo attacks, if their active noise and electromagnetic signals did not work, they would sacrifice themselves by streaking to an intercept point with the incoming device.

"When?" Arv asked.

"The jetmarines and one of the seacoverters leave port any moment now, and the other seacoverters is meeting them on its return run to Spain. It will be there tomorrow. As for the Navy subs... that's classified but dad's guess is that Admiral Hopkins will have one or both of them there within a day. In the meantime, our State Department friends tell us to not try to go into the facility. Patrolling is okay; visiting is not permitted right now."

So, all they could do was wait to see what might happen at the underwater city.

Tom devoted the next hours to completing his checks of the probe rocket, including amending one subroutine that controlled the flip-over positioning of the rocket on the return flight. He originally had it set to flip over shortly after the—now retained—repelatron pods had it streaking back toward Earth. But in thinking it over he decided that the program needed to wait for several weeks in case the repelatrons were required to maneuver the probe out of the way of anything, like one of the asteroids in the belt it would traverse between Jupiter and Mars.

He called for the team to come get the rocket and to pack it for shipment. After pointing out a few items and making certain they understood the need to support the length of each section at five different places, he left The Barn and headed for his underground office and lab.



“Hold on thar, Son!” came a call from across the tarmac. Tom stopped and turned to watch the rotund man in gaudy western shirt and ten-gallon hat come clomping at high speed toward him.

“Hey, Chow,” Tom greeted the older man. “What brings you out here at top speed? And, in a shirt that could blind the sun!”

Chow was now standing next to his young boss, panting and wheezing a little. The yellow shirt he wore—one Tom had never seen before but was as bright and gaudy as anything the westerner ever wore—was wet from sweat. He took off his hat and began fanning himself with it. A moment later, he straightened up and looked seriously into Tom’s eyes.

“I hear tell ya got some new outer space thing goin’ up on Friday an’ yer leavin’ ol’ Chow out o’ things. That can’t be right?” He looked both concerned and a little hurt.

“What? Oh, Chow. Not really. We’re just sending up that rocket over there,” and he pointed over his shoulder with his thumb, “to go out and see what happened to Pluto. Nobody’s going in it.”

The old ranch cook’s eyes narrowed. “Ya mean ta tell me that yer sendin’ up a rocket ta search fer Mickey Mouse’s dog?”

Tom laughed out loud. “No, Chow. Pluto. The heavenly body out there that used to be thought of as the ninth planet in our solar system. Hadn’t you heard? It’s gone missing and we need to make sure it isn’t going to do something stupid like come crashing back into one of the planets. That rocket is taking a bunch of measuring devices up to search around. I promise you that when the time comes, you’ll be on the list for the manned mission we will undertake in the future.”

“Wahl, that okay then. Sorry ‘bout grillin’ ya, but ya know I hate it when ya take off anywheres without yer faithful old cook.” He smiled at Tom. “Like the shirt, don’t ya?”

Tom shaded his eyes as the two began walking to the underground hangar—Tom’s destination—and Chow brought up the subject of food.

“I heard that ya didn’t stop by the canteen fer lunch. Now, it’s only ‘bout two, so I’ll fix ya a sandwich and a drink. Okay? Ham salad be alright?”

Tom agreed that it sounded fine.

He had been looking through several dozen images on his computer when he heard Chow’s cowboy boots clomping on the concrete of the hangar floor, and the slight rattling of the wheel on his rolling cart that nobody could get to settle down and work smoothly. It had rattled and clattered for as long as Tom could

remember.

As he set down the plate and glass, Chow looked casually at the screen. “Good golly, Miss Molly! What in tarnation is that thing?”

“That, Chow,” Tom replied, “is one of the possible designs I’ve been working on for a new type of spaceship. It’s going to be heavy on the engines and a little light on accommodations, but it should handle a crew of about six. That’s five regular crew *and* our head chef.” He winked at the cook.

“Wahl, all I got ta say is that’s one ugly hunk o’ machine. Looks like a giant bone with them bulges a both ends.”

Tom nodded thoughtfully. In truth, it was his least favorite design. He tapped his keyboard and brought up four smaller pictures of other designs. “Any of these catch your fancy?”

Chow came over to stand next to Tom. “That’n,” he stated, pointing at a golden craft featuring fin-mounted repelatron emitters and a superstructure almost like a large airplane tail. “I like the looks o’ that one. Say... where’s this new space thing supposed to take us all?”

Sighing, Tom replied, “I am not sure, Chow. Before Pluto went missing I was thinking of trying for a landing on Saturn and also on Jupiter. Being gas giants, they are a little lacking in solid ground, so it would be more like a very low hover or possibly a fly-by at just a few dozen yards. Maybe even scoop up some of whatever we fly over. It was a long-range plan, maybe two or three years or more down the road. But now, I’m thinking we might need to build it and go see what we can do about Pluto.”

“Wahl, if’n he’s gone an’ all that, but I got ta say I ain’t felt nothin’ goin’ on right here, so maybe we don’t need ol’ Pluto out thar.”

“You could be correct, but we have to be absolutely sure that if it is gone, it is going to stay gone and not cause problems months, years or even decades from now.”

After Chow left, Tom nibbled at his sandwich while he pondered three of the designs, his favorite ones. No matter what he liked about the others, the one Chow had picked kept dragging his attention back.

For over an hour he let his mind and eyes roam over all the designs, running scenarios about how each one might work. He got up and walked to the big office in the Administration building where he called up his designs again.

His attention was yanked back to reality when his intercom buzzed.

“Tom? It’s Trent. You have a call coming in from a Mr. Peter Crumwald. Isn’t he the one who used to run the Helium City operation?”

“That’s right, Trent. Put him through, please.” Tom wondered why Peter might be calling. The last thing Tom knew, the former operations manager had finished his vacation and was now at the university, teaching. “Tom here. What’s going on, Peter?”

“Hi, Tom. Is your dad around? I think that I need both of you on this.”

“Hang on.” Tom placed him on hold and buzzed Trent. “Can you get dad here, please. Tell him it is a personal request from Mr. Crumwald.”

Three minutes later Damon came rushing into the office and sat down. “Give me fifteen seconds to catch my breath,” he requested, and then quickly reached out and opened the line.

“We’re here. What’s this about?”

“Hello, Damon? Tom? This is Peter Crumwald.”

“Yes, Peter, How have you been? “Damon asked. “We’ve been a little worried about you since the dismissal incident. Are you keeping busy at the university?”

“Ha! University life is just what I remember it to be. Little cliques full of small-minded and out of touch professors, male students spending more time ogling the coeds and a certain percentage of the girls who subscribe to the ‘if I flirt with or sleep with my professors I’ll get a passing grade’ school of laziness. But, I didn’t call to talk about what’s going on down here at Georgetown. I called because I just received some news that I wanted you to hear.”

“I hope it’s good news, Peter.”

“It could be, Tom. Could be. And, then again... Anyway, the U.N. oversight committee just sent me a letter apologizing for their rash handling of what they term ‘The Helium City Situation’ and have suggested that reinstatement with a ‘forgive us and don’t sue us’ bonus to boot could be mine immediately.”

“That’s great news, Peter,” Damon said. “What’s keeping you from packing? I sense hesitation in your voice.”

“Yeah. I guess you could say hesitation. Fear is another good word. The thing is... I’m not certain if that’s as in fear of danger or fear of failure. Or, even fear about that mysterious death. They want an answer even before I go down and see how bad things have become in the past weeks. I called you two for a little guidance. Failing that, reassurance that we’ll still be friends even if things are

horribly bad and we can't fulfill any more helium deliveries."

"Do you really think it could be that bad, Peter?" Tom asked with deep concern.

"The famous rumor mill also is abuzz with a report that Samson and his minions have been doing some very shady deals—so shady there is no sun to be seen—with some very bad people. Knowledge about that may be what led to the recent, uh... death."

"What do you hear about that from the committee?"

"Well, Damon, the official word is that Damian Goosens had a heart attack and died peacefully in his sleep. The only problem with that is all communications out from the City mention his office and being slumped over his desk. And, the gun."

Damon looked at Tom and shook his head. "I can see why you want to be cautious. You do know that the entire area for about one hundred nautical miles is going to be under active and passive surveillance starting in about..." he glanced at his watch, "...five hours. U.S. Navy and lots and lots of Swift submersibles."

They both heard the man on the phone exhale in relief. "That is the best news I've heard today. It will probably cause an uproar in certain circles and certain countries, but I'd rather know you are there to have my back than be on my own. I can't say that I trust Atlas Samson to keep clear and bow out gracefully."

They spoke another twenty minutes. At the end, Crumwald agreed that he would take the position—again—but it would be with the provision that the Navy and Swift submersibles remain until he said they could leave, and that he be allowed to close the wells for a period of two to three weeks to investigate the entire situation. After that, he was asking that all contracts be downsized to the point where the wells might continue for as long as possible.

While Mr. Swift made a series of phone calls to various friends and associates in the Government, Tom finalized arrangements for the mini fleet of Swift submersibles to be outfitted and dispatched for a long-term mission.

"Please also arrange for the *Schouten* to be prepped as the primary resupply ship."

One of Tom's larger and newer seacoasters, the *Schouten* had been named for the 17th century Dutch navigation pioneer, Willem Cornelius Schouten. Almost sixty percent larger than most seacoasters, it featured a single manned module in front with a large cargo area making up the rest of the vessel. It could not only carry freight over and under the water, it also was the first of Tom's newest seacoasters specially outfitted to tow an unmanned seacoaster cargo module. In effect, it had a trailer hitch.

With that taken care of, he drove over to Bud's hangar office.

"Up for an adventure?"

"Sure! Where to? Deepest, darkest Africa? The Moon? A tea party with the girls?"

Tom chuckled. "No, just down to Helium City."

"Uh... skipper? Weren't we kicked out of there by that Samson guy? And I believe the U.N. told us to steer clear. I mean, even with his chief toady dead, aren't we asking for trouble if we head down there?"

Tom filled Bud in on the Peter Crumwald situation. He finished with, "So the U.N. has agreed that they made a mistake, are ordering Samson to keep away from the premises and will be backing it all up with two fast attack subs to support our seacoasters and jetmarines. We're just going to act as the cab drivers for Peter."

"Oh. Then, okay. Uh... can we take Sandy and Bashalli along? Last night Sandy kind of told me that she is getting tired of just the occasional dinner or lake outing and wants to come along on anything that looks like an adventure." He looked a little embarrassed, but Tom simply nodded.

He, too, had received much the same "message" from his fiancé within the past twenty-four hours. And, though it had been delivered as she nibbled on his right earlobe, he knew it was more edict than suggestion.

"Guess we're stuck, flyboy. It might be a nice diversion to get them down to Helium City for a day or two. You do realize that they'll want to go visit the old gold city ruins and that will probably start a conversation that goes something like, 'Gee, Bashi. Look at all that gold. Kinda like the gold of that engagement ring Tom gave you. I wonder if Bud is going to see this and get the hint!' Plus, she'll do that well within earshot of you. Ready for that?"

Bud reddened. He and Sandy had been dating for longer than Tom and Bashalli, and even though both realized that they were meant to be together, he was a little afraid.

Not, as he pointed out to Sandy, that he had any intention of seeing anyone else, it was just that... and that was where his explanation usually broke down. The truth was that he really didn't have a good reason for not asking the beautiful blonde to become his wife except that he felt he wasn't ready for the responsibility.

"Well, it wouldn't be the first time she's made it abundantly clear that I'm behind schedule on the proposal front," Bud admitted. "I guess I can take another round of hints, sad eyes and slight yet meaningful sniffles."

Both girls agreed almost before Tom and Bud had managed to get out half of the story.

“We’d love to go!” exclaimed Sandy throwing her arms around Bud’s neck. “And, we can all go tour the old gold city. Right?”

Bud looked helplessly at Tom, who only raised his left hand and pointed at his own ring finger.

The trip to Fearing and the dive to Helium City went off without a hitch. Peter Crumwald had arrived at Fearing three hours early along with his six suitcases and file boxes. The five of them took Tom’s second jetmarine—one that was designed for a crew of six and not the two his first one could barely hold—arriving just five hours after departing Fearing Island.

On their arrival at the entrance to the large hydrodome covering the city, Tom could see that the older diesel submarine Samson used was no longer docked. He was directed into slip number two and soon had the jetmarine “tied down” using the magnetic clamp system he had devised.

“Oh, Sandra!” Bashalli gushed on stepping out of the airlock and into the open plaza area. “I know that I have been here before, but I had forgotten how incredible it looks and feels to be down under the ocean like this.” She looked up at the dome arching overhead and slid her right arm through Tom’s left one and hung on tightly.

“Peter!” came a shout from their left. Turning, they could see a tall, redheaded man loping toward them.

“Alvin!” Peter called back stepping forward to take the larger man in a bear hug. “Guess who’s back?”

Excusing themselves, the two men headed for Peter’s old office. “Are they just going to leave his things there?” Sandy inquired, pointing at the suitcases and boxes.

“Somebody will pick them up in the next few minutes and get them delivered. Come on. Let’s go check in with the Admin desk and let them know how long we’ll be around.”

It was nearing six o’clock in the evening, local time, so they put off any excursion until the following morning. After breakfast in the mess hall, they backed the jetmarine away and headed the several miles to another, smaller, hydrodome-covered area. This one, generally kept darkened to avoid having it easily detected, was the site of Tom’s first deep-sea air bubble. Once he had cleaned off centuries of silt and plant growth from the ancient ruins, he had exposed it for what it was. A one-time city gleaming from streets to rooftops of gold.

Of course, it was not solid gold, but some of the most expertly

applied plating Tom and many mineralogists had ever seen. Plus, the underlying metal was an alloy that was far beyond anything known from that era.

Using flashlights and a new light globe Tom had designed—a clear sphere about the size of a baseball that you bounced on the ground to turn on and off—held in their cupped hands. It produced the equivalent of a 120-watt light bulb.

As expected, the girls “ooh’d” and “aahh’d” at the beauty of the city, and the conversation of, “Do you know what a good use for gold is, Bashi?” also came up, but it was soon cut short when they all saw a shadowy figure stagger out from behind one of the support columns of a large building.

With icy-cold shivers running down all their spines, they watched the dirty and emaciated man as he staggered toward them.

“Please, help me,” he said to them, sinking to his knees. “My name is Damian Goosens and I was left to die here by my employer, *Atlas Samson!*”





## CHAPTER 10 /

### A NEW CRAFT

EVERYONE FROZE. The girls in fright and Tom and Bud because they recognized both Samson's name as well as the name this disheveled man claimed was his.

"But, that's impossible!" Bud said. "You're dead!"

Sandy and Bashalli both let out gasps. "Dead?" Sandy managed to squeak out as she moved behind Bud.

"Wait," Tom commanded. "If you're Damian Goosens, then who was it that died over at Helium City?"

The man looked confused. "I don't understand. I never arrived at Helium City. Ohhhhhh..." he sagged a little and Bud reached out to steady him. "Do you have any food or water?"

While Tom pulled out a bottle of water from the small knapsack over his shoulder, Bud ran back to the Jetmarine to retrieve some of the sandwiches they had brought along.

Goosens drank and ate ravenously, and Tom twice had to restrain him from going too fast. "You will only make yourself sick and then get nothing from that food."

In between bites and drinks he told them an incredible story.

"I received a phone call from Samson telling me that I was to become the new operations manager of your Helium City. I was surprised as I am only his chief accountant. But, I was rushed to his submarine dock, taken onboard and we departed within a matter of just three hours from the time I was informed."

He paused and took another drink, this time from his third bottle of water.

"About half way here I was called into Samson's private compartment. There, I was grabbed from behind, tied to a chair and introduced to a man Samson called *Damian Goosens*."

Tom moaned. "Oh, boy. I can see where this is heading. The false Goosens was the one who reported to Helium City, you were stranded here knowing that people rarely come over—and even then it is unusual to come inside—so it was the impostor who committed suicide."

"Or, was killed," Bud reminded everyone.

Tom shook his head. "No. Harlan has seen the autopsy report. There was no sign of foul play and no bullet wound." Turning to

Goosens, he asked, “Do you have any idea who the man was?”

Goosens nodded. “Yes. At least, I heard Samson say his name as I sat there, restrained. It was Elias. I did not hear any other name and do not know if that was his first or family name.”

“But, how did you manage to survive all this time without food or water?” Bashalli asked him.

He gave her a slight smile. “Although I had no food, I was once almost twice the weight you find me now. As for water, there is some condensation that occurs up there on the dome. I devised a small collection cup from scraping gold off of a statue across the street. It sits next to the bottom edge of the dome and I have managed to get, perhaps, four or five hundred milliliters each day.”

Now that the man was feeling slightly better they helped him get to the jetmarine and all five headed back to Helium City.

There, he was placed in the Dispensary room for treatment and fluid replacement, and Tom made a call back to Enterprises after apprising Peter Crumwald of the situation.

“That is an incredible turn of circumstances, Son. But, it also goes to explain why the man whose body was brought back showed little sign of the pockmarking that Goosens evidently received from a bad bout of childhood measles. I take it that your man has those marks.” When Tom confirmed it, he concluded with, “I will notify Interpol and the FBI about this.”

Neither of the girls felt up to a second visit to the gold city, preferring to sit quietly in the mess hall the base sipping tea and talking in low voices. Nothing more was said regarding gold or Sandy and Bud’s relationship.

The following morning, after wishing Peter luck in getting to the bottom of what was going on, they departed. Goosens would be transferred to Fearing Island the following morning.

None of them were very up to conversation even on the flight back to Enterprises. After prolonged goodbye hugs and kisses, Sandy drove Bashalli home in her little car after dropping Bud off at his small office in one of the hangars.

Tom had barely had the chance to sit down and check his email when there was a knock on the door.

“I was wrong,” Harlan admitted as he walked into the Swift’s shared office.

“About what?” Tom asked, looking up from his computer. “The cause of death?”

“No.” Harlan sat down, heavily, across the young inventor’s desk. “About your erstwhile kidnappers. Remember how I told you

they were just from some French radical group out to make money for their cause?”

Tom nodded.

“Well, I was wrong. Interpol just handed the CIA a report, and it made its way to me as quickly as a courier could get it here. It appears that the French group is tied—practically welded—to the North Koreans. In fact, this group may part of the same group who have kept supporting the atomic weapons program over there in spite of international efforts. We had evidence that the kidnapping was supposed to get them five million, but that was just a side angle. The big thing was that after getting the payout, they were going to kill you.”

Tom had gone pale. “Why? What could they hope to get from that?”

“All we know is that someone has been funding them who is not associated with North Korea. I guess this money source wants you dead, and that brings us about full circle to who Interpol believes may be behind this. Our old friend, Atlas Samson!”

As Tom stared, open-mouthed, Ames added, “Someone has also been spreading a rumor about Pluto. Something along the lines of you Swifts have found high-grade uranium on it and are getting ready to mine it in secret. You can’t imagine how excited the North Koreans would be to be able to get their hands on a rich source of materials to build nuclear warheads.”

“But they can’t deliver them,” Tom stated. “They can’t even get out there to mine anything. In the past decade they have attempted to launch at least a dozen of what they called *satellites*, but everyone knew were test rockets for potential weapons use. And, they all failed. The farthest any one of them got was the one back at the beginning of the testing and that only made it a few thousand miles or so. They all blew up!”

He stopped when he saw the older man biting his lip.

“What is it, Harl?”

Ames took a deep breath. “I can’t really tell you, skipper. I was still Secret Service when that first one blew up south of Japan. Things are still heavily classified. Just understand that it was no accident that they have failed each and every time. That stays in this room. Understand?”

Tom nodded.

“I can see your mind racing on how all that could have happened, but I suggest that you forget I said anything. Suffice it to say that all measures taken were effective and will continue to be.

To get back to your kidnapers, Interpol is hot on the trail of one of them, and from your description of the woman who lured you off the road, it seems to be her. There have been sightings of a heavysset man and at least one other male near her, but so far no identifications.”

“So, the gang is gone? Out of the country?”

“We think so. A woman and two men rented a car in Boston about five hours before you were zapped, and returned it late that night. Before we found you. The same three were seen on security footage at the airport an hour after that in line for a red eye flight. They headed back to France by way of Belgium.”

Tom’s head shook in a double take. “Belgium?”

“Yes. Why?”

“It may be nothing,” he said bringing back up Damien Goosens and the substitution, “but Goosens is Belgian. And, from what I gather, Atlas Samson has many holdings in Belgium. What do you think?”

Ames shook his head. “Far too many coincidences for my liking. I’ve got to go look into that. I’ll let you know what I find out.” Five seconds later he had left the room.

Tom could hear Ames speaking with his father outside the door for the next few minutes. Then, Mr. Swift walked into the room.

“I just spoke with Harlan, Son. I filled him in on a little tidbit I just received. The dead man from Helium City was named Elias Van Austerman. He was Belgian and was once being groomed to be the right-hand man of Atlas Samson. Interpol says he disappeared several months ago just before they were to bring him in for questioning about some of Samson’s shadier dealings. They supplied fingerprints, and those are a match for our deceased man. They want us to back off so they can handle the investigation. I’m happy with that but I suspect Harlan will keep digging even though I just told him not to.” He smiled at Tom. They both knew that Harlan Ames was not the sort of man to let go of a good mystery.

“Anything happen on the Pluto front while we were gone?” Tom inquired.

Mr. Swift nodded. “Yes and no. We have been given a preliminary budget and go-ahead for a manned mission based on what the second probe might find.”

“Does that mean I should be getting ready with my whizz-bang solution for getting us out there without getting smashed by acceleration forces?” Tom asked.

Mr. Swift nodded. “I would be looking at constant one point two

five Gs and no greater. I doubt that Doc Simpson would agree to anything more stressful. He says he will help design the special acceleration tanks, as he calls them, with you.”

Tom left a few minutes later and headed for his underground lab and office. It was the quietest place in all of Enterprises being almost a hundred feet under the surface. Tom’s *Sky Queen* was kept there, always ready for action although he had found he was flying her less and less these days. As he walked across the hangar floor he reached up and patted the underside of her huge fuselage.

In his office he called up all the designs he had been toying with for his next space exploration ship.

As before, his eyes kept coming back to the gleaming, golden ship Chow had first picked out. It had the most possibilities of any of the designs. About half the diameter up front as it was at the back, it would be possible to build her so that the drive unit could be removed along with what Tom was beginning to think of as the payload module up front. That would take up the front forty percent or so, and could be as easy to swap in and out as the cargo and specialty modules used by his *Super Queen* jet.

The *Super Queen’s* modules now included both the original cargo, machine shop and hospital modules, along with a new triple deck passenger-carrying module, a hangar/aircraft launch and recovery module, and the newest scientific lab module.

So, this new spacecraft would be capable of multiple mission types. And that, Tom pondered, might include everything from simply carrying an increased fuel load for lengthy missions, to cargo pods that might be used on placing long-term missions on the Moon, Mars, and who knows where else. The only thing he was certain of was that the large ship probably would never land on Earth. It would be constructed in orbit and would be “parked” there between missions.

It was just too large and heavy to keep bringing back down.

“You never know, Chow,” he told the Texan as the roly-poly man served him a hot breakfast two hours later. “I might even outfit her with a huge freezer and refrigerator section and a kitchen. You could run the largest intergalactic chuck wagon around!”

Chow’s eyes narrowed. “You ain’t funnin’ me like ole Buddy Boy, are ya, son?” he asked. Bud was well known for pulling the chef’s leg over many different things.

“No, Chow. I may be stretching it a bit, but if we build this thing the right way, there’s no telling what we could do with her. At the very least I promise to outfit a nice little kitchen in the crew quarters for you so you can come along on some of the missions.”

The big man smiled broadly. “Ya cain’t keep me from it!” he declared. “You go up, and the ole Chow hound goes too!” He left the office a minute later and Tom could hear his cheerful whistle even as the elevator door closed across the wide hangar.

After wolfing down his eggs and corned beef hash, Tom went back to the computer. The more he looked at the basic design the more convinced he became that it was the only one he wished to work on. He transferred all the other designs to his ‘Pending Ideas’ folder and set to work refining the design, both inside and out.

By quitting time that afternoon he completed the preliminary design and layout of the crew quarters and command room that took up most of the sail-like superstructure of the craft. Working from the notion that he needed to accommodate a crew of ten to twelve, and to offer space enough to move around in—plus an exercise area to keep astronauts fit during long missions—he ended up with a finished vessel that would be more than three hundred feet long.

He stood up, scratched his chest and then shook his head. *That is just too long*, he told himself. Sitting back down he wondered what might be done to shorten it to no greater than one hundred fifty feet. A few minutes later he came to a pair of decisions.

For starters, to allow for enough room for everyone to be able to exercise and move in more than a series of small spaces, he moved that area out of the “sail” by adding a raised, one-floor area that would sit around and extend in front of the living quarters. It would run about ninety feet long and be fifteen to eighteen feet wide. It could easily hold an oval walking track, exercise and entertainment equipment and could only take up a few feet of space down into the top of the main hull.

Checking, he saw that the ship was now under his hoped-for length. It was one hundred forty-two feet long, about sixty-eight feet wide at the back, and thirty feet at the nose.

He backed everything up and headed home.

The next morning he called in Hank Sterling and Arv Hanson. After showing them the 3D model on his screen he asked the standard questions.

“Hank. Is this something we can build in pieces small enough to transport into orbit, maybe even to the Outpost, and assemble there? And, Arv—”

“Three days, Tom,” Hanson broke in. He knew Tom’s question would be about when he might be able to deliver a scale model.

Tom grinned and held up one hand. “Ah, but Mr. Hanson, you haven’t heard everything yet. You may want to adjust your schedule

once you hear.” He then described the multiple module approach.

“I’ll want a repelatron drive module and a plasma drive one as well. Then, can you work up a pair of forward modules? One for, say, cargo, and the other for equipment necessary to set up a mini mining and refinery unit. I want something more compact and foolproof than the one we took up to the Moon when we had that contract for Armalcolite. But, that part is my problem. I just need a couple different slip-in modules that can be labeled with different names.”

The lunar mining project Tom spoke of involved mining a mineral almost exclusively available on the Moon. Named for the Apollo 11 astronauts—Armstrong, Aldrin and Collins, Tom had been granted exclusive rights and a very brief timeframe. The equipment taken up had been prone to breakdown and was very rudimentary. It had *almost* doomed the project.

“Will do, skipper,” Arv said. “I’ll make them out of different colored polycarbonates and leave a flat surface to be used for any label you might want to add. Maybe where they slip in under your little jogging track compartment.”

Tom nodded. “And—”

“Three days!”

The trio shared a laugh. They each knew that Tom only suggested short timeframes for projects where time was critical and that he allowed a bit more leisure when possible. They also all knew that Arv’s offer of three days would most probably turn out to be less as Tom already had finished the wire design version of the structure and also the basic outer skin of the craft. All Arv would need to do was to skin the inner modules, fashion the two drive unit rear panels to show the differences between engine and output types, and then have one or more of his 3D printers start pumping out the pieces.

When they left—Arv with his work to do and Hank with the design that would soon need to be turned into something that could be built full-scale—Tom turned to the job of devising the two drive modules.

The repelatron module would be relatively easy. It would be self-powered for part of the flight using a miniature reactor built by Swift Enterprises, and would feature large solar collectors that would unfurl around the entire aft area of the ship to capture energy directly from the Sun.

Rather than attempt to add one or more repelatron emitters to the front of the ship to act as brakes, Tom quickly realized that he could set the drive repelatrons near the outer ring of the hull, and

placed on swing-out arms. They could be switched from rear facing to front facing in a few seconds. And, with the tapered front end of the craft there would be no issues with the force beams hitting the hull.

That module designed, at least in concept, he went to work on a plasma drive system.

This wasn't quite as easy, although he believed the same swing out arms could be utilized. The problem he felt might occur came with the intense heat generated by such a drive system. He feared that even the tapered hull might not be sufficient to protect it from damage, particularly if the ship ever had to do an emergency deceleration.

It was a real poser and something he felt he should get advice on from his father.

"Sure. Come on over," the older inventor offered. "I've got at least twenty minutes before I need to head home to see your mother."

That made Tom gulp. He suddenly remembered that he and Bud were taking the girls out rollerskating that evening. "Be there in three minutes!"

Tom raced out of the office and took the elevator to the surface. Jogging across the tarmac toward the Administration building he slowed and began laughing when he saw his father standing by their cars.

"I thought I'd save you a minute of running and another minute of panting," Damon told his son. "So, what is up that you need a tired, old man's opinion on?"

As brilliant as Tom was he knew that his father was still miles ahead of him in many ways. Where Tom frequently found himself targeting a narrow path toward some invention, Damon Swift always could see a much broader array of multiple possibilities.

Tom told him about the dual propulsion modules approach and how he had solved the repelatron issue, but wasn't certain about success along that path with the plasma engines.

"I see," was all Damon said before lapsing into concentration. Finally he looked at Tom. "Promise to not tell your mother that I will not be spending one hundred and ten percent of my concentration on her every word this evening, and give me tonight to think this over. Can it wait until tomorrow?"

Tom laughed out loud. "Gee. I was just hoping to get the subject opened today and then maybe we can come up with something in a few weeks. I guess tomorrow will be fine!"



Tom headed home in his car with Damon right behind him. Twice Tom looked back and thought that he saw the same car following them. It made five turns right behind them, but never came more than a full block closer to Damon's car.

Tom tapped his TeleVoc pin. This second generation pin could put two Enterprises employees who were within a quarter mile of each other in direct contact.

"Dad? Do you see that car behind you? I think it's following us. Should I call Harlan Ames?"

"I've got him on my cell phone right now, Son. Hold on—"

A full minute later, and as Tom and his father neared the second to the final turn before arriving home, Damon came back on. "Tom. Harlan says to loop back along Troutdale Terrace and then turn right onto Hillsdale. He says to keep it about three miles under the posted limit and he should have two cars intercept us about the time we cross back over Linn Avenue. Oh, and to not take too many looks back."

"Okay!" Tom slowed and took the first turn as directed. His father's car followed. Just as Tom believed the tailing car might have driven on he saw it make the turn. It was going more slowly than before, but soon sped up and retook its position behind Damon's car. After taking the second turn the car behind them suddenly sped up. Tom saw this and also sped up. Damon followed suit. It was now obvious to both of them that the driver of that car was attempting to pull even with Damon's car.

Just two blocks ahead Tom spotted two of Enterprises' SUVs stopping in both lanes. There was a little room between them and Tom's car shot through the gap. Damon's car was wider and Tom worried that he would not get through, but the Security drivers pulled back and away. With inches to spare Damon's car made it.

The SUVs pulled forward giving the other driver no space.

The Enterprises men jumped out taking aim at the oncoming car with eGuns. Although the driver would be insulated inside, recent experiments had shown that the electrical systems and computers of most cars could be interrupted, shutting them down with one or two good shots.

The mystery driver tried to steer to one side but saw the way was blocked. He hit his brakes and his large sedan skidded to one side.

***ZEERACKKK! ZEEERACKKK!*** went the eGuns as their highly-charged electrical beams raced out and hit the car in the hood and the trunk.

The car began smoking and it skidded to the left and into a

nearby tree. The Security men raced forward, yanked open the door, and pulled a dazed man from the seat.

As the Swifts approached, the man looked up at them, dazed. “Hello. My name is Samson. Hazard Samson,” and he slumped forward, unconscious.

## CHAPTER 11 /

### GETTING THERE ISN'T HALF THE FUN

TOM AND DAMON looked at each other. *Hazard* Samson? The man certainly didn't look anything like the oily and obnoxious Atlas Samson. He was tall, handsome and athletic-looking.

"Get him to the hospital and call the Police," Damon instructed. "Tell Ames to call me at home as soon as he figures out the story behind our mystery driver." He turned and headed for his car.

Tom said to one of the Security men, "Gary. Bud and I will be out with Sandy and Bash, but give me a call as well. Okay?"

Gary Bradley, the number three man in the Security organization at Enterprises, nodded. "Sure, skipper. If not me then Phil Radnor. I'm supposed to be heading out for vacation in a few hours."

"Well, have a good time. Don't drink too many margaritas!"

Bradley snorted. "Hardly! We're heading out to Denver to visit my in-laws. At best it will be wine spritzers and iced lattés."

Tom arrived home just a minute behind his father. After calling Bashalli to tell her he would be about ten minutes late he jumped into the shower and then got changed.

As he came downstairs, Bud was just knocking on the door. Sandy greeted him by jumping into his arms and kissing his nose.

"Sandra Swift!" her mother's voice came from the kitchen doorway. "None of that in this house. Your old mother wishes to think of you as still being shy and reserved and somewhat awkward around boys. Do not break that illusion, please."

"Mother!" Sandy responded in a voice that spoke of a combination of overdone horror, pretend irritation and mock shock. "I simply stumbled over some bump in the rug and Bud was steadying me. I mean, he practically kept me from getting horribly injured!"

"I'm sure," her mother stated with a level of sarcasm that only Sandy caught. She had the decency to blush.

The three left a moment later and went to pick up Bashalli. It was to be her very first time up on roller skates and she had professed to being quite nervous about it.

"I do not wish to appear to be clumsy and awkward to you," she had told Tom when the subject first came up. "You would not wish your steady date and now fiancé to fall in front of people you know

and cause you to be embarrassed, do you?”

“You’ll do fine,” Tom had assured her. “I’ll be right there holding on to you.”

She was still nervous as they pulled into the parking lot of Smith’s Roller-Rink-O-Rama. Inside, she became very quiet while she quickly laced her rented skates up. In fact, she had done it almost expertly, as Sandy pointed out while they stood waiting for Bud and Tom to get their skates on.

“Just a knack,” Bashalli commented quietly.

Tom pointed out, “You seem awfully steady on those things,” as they walked across the carpeted staging area and onto the smooth, wooden floor.

“If you had spent several years walking in high heeled shoes I am certain you would be fairly steady on four large rubber wheels, Thomas,” she said.

For the first half lap of the floor she held tightly onto Tom’s right arm. But, when he had to stop suddenly to avoid rolling over a fallen child’s fingers, she released his arm and skated off and around the corner. In seconds Tom, Bud and Sandy were standing still in the middle of the floor watching the Pakistani girl as she rolled around the far end of the floor, spun around and skated backwards for a few seconds, and then went into a slow spin.

“Okay. Give!” Sandy demanded of Bashalli as the foursome sat in the refreshment bar a half hour later.

“Okay. I did tell you that I had never been on roller skates, but I may have neglected to mention that as a child I did learn how to ice skate when we first moved to this country. It has been at least six years since I was on skates, but it is very much as people say. Once you learn how to fall down, you never forget!”

The other three looked at her and then burst out laughing. They understood what she meant.

At that moment, Tom’s cell phone gave off a squawking noise. “Pardon me, guys. This is important. I’ll tell you about it in a minute.” He rose and walked toward the unoccupied changing area. Two minutes later he came back.

After explaining about the earlier car incident, but downplaying any possible danger, he told them, “That was Phil Radnor. He says the man is exactly who he said he is. The son of Atlas Samson.”

“That rat!” Bud growled, now getting angry.

Tom filled the girls in on the most recent situation and the apparent involvement of Atlas Samson.

“So, his son wants to talk to dad or me. Too bad he didn’t just make an appointment. Now he faces vehicular stalking and reckless endangerment charges. I wonder what he has to say for himself.”

“When do you leave to go find out?” Bashalli asked. She knew her man very well and understood that her forthcoming life with him would always involve quick decisions and the need to rush off for various events. She only hoped that he would stay free from harm.

“The doctors have asked that this Samson get a night’s rest before questioning. Phil and one of Shopton’s finest will be guarding his room all night. I will get there around eight tomorrow. So, let’s drink up and get in some more skating.”

It turned out to be a wonderful evening with Bashalli showing Tom how easy it is to turn around and skate backwards, especially when holding onto another skater... her. By the end of the session they were skating back and forth, zig-zagging though the other skaters and gazing into each other’s eyes.

The next morning Tom arrived at Shopton Hospital at quarter till eight. He was directed to a room on the third floor where he found Radnor sitting in a chair talking to Samson.

“Oh. Hey, Tom. This is Hazard Samson. I guess you know the story with his father. Haz and I went to school together down in D.C. Haz, this is Tom Swift, my boss.”

Tom was a little nonplussed at the turn of events. He had expected to be part of an interview with someone who didn’t want to talk, or at least someone who was angry. Finding this large man—*Samson must stand about six foot five*, Tom thought—in pleasant conversation with his number two Security man, and seeing the huge grin that spread on Samson’s face, was more than a little perplexing.

After shaking Tom’s hand, Samson said, “Please call me Haz. Friends do. Hazard is for business occasions and when my father speaks to me, which isn’t very often! You see, he named me Hercules Demeter Samson at birth, but on my twenty-first birthday I had it changed to Hazard Allen Samson. Made the old man go a bit spare.”

Phil piped in, “We started calling him Has with an ‘s’ because of his initials, but that got silly from a grammar standpoint—you know, like ‘Has has to go’—so he demanded we change it to Haz. And,” Phil said with a grin and a nod of his head to the man in bed, “when the big guy demands something, you do it!” They shared a laugh.

In spite of himself, Tom found that he was grinning. “Well, Haz,

can you tell me what was so important last night that you risked your life rather than just calling us and setting up an appointment?”

Samson sobered immediately. “I need to speak to you about my father. And, it is because of my father that I didn’t want to go through channels. He is a powerful and vindictive man and I couldn’t take the chance that he might have, uh, installed someone in your company to keep tabs on things. Luckily, Phil assures me that unless it happened more than four years ago, it probably hasn’t happened.”

“So, my question remains,” Tom insisted. “Why?”

“I need to warn you about my father and his intentions at your underwater helium facility.” Tom’s attention was immediately captured and he pulled up a chair as Samson continued. “My father is a ruthless man and entrepreneur. Nothing is too far out of bounds for him when he wants something. I hadn’t heard about the substitution or the death, but I can’t say I am surprised. As I told Phil, he has been plotting to take over the helium wells for more than a year. And now, I hear he found a way. I have no idea what he is doing, but I want you to be aware that he isn’t beyond making people who get in his way disappear!”

“That looks like the end of a sausage grinder, skipper,” Bud said as he peeked over Tom’s shoulder at the 3-D image on the screen. The nose of the spacecraft was no longer a smooth curve; it was open and had a circular ring of angled gears sticking out. “So, I’ll assume that it isn’t... but that leaves a lot of room for what it might be. Care to give me a hint?”

Tom had to smile. A lot of times Bud’s comments about what an object in design—or even after it had been build—were more silly than descriptive. This time, though...

Tom had returned to Enterprises one hour earlier from his meeting with Haz Samson. To try to get his mind off things he had been working on a few refinements to the basic design of his new spacecraft while he waited for his father to become available to talk about the plasma engine situation.

Since coming back to his office, he had a revelation about the mining aspects of the new craft and the design changes reflected that. The more he had considered it, the more he realized that he wanted and needed to bring back large samples of Pluto, if they found it, for analysis, and that meant the mining module was a priority.

“I might have to award you a prize, Bud. What you’re seeing is

one possible front end of the new spacecraft I am going to build. This will be a module we can use to mine some of the minerals on any planet we visit. Like if we ever want to do some digging in the asteroid belt. Or, Pluto. The idea is this. We know there is only minimal gravity and that trying to set up a traditional mining operation would be too difficult.”

“Uh...” Bud raised a hand, interrupting Tom. “Why?”

“Well, think about it. In order to mine something you have to expose it. Generally that means digging it up. In low or near zero-G than means that you have to carefully drill or shoot anchors into the surface before you can cozy the drill up to it.”

“Ah. Otherwise it’s like trying to shoot a gun that is sitting on a table. The force of the explosion kicks the gun backwards. Right?”

Tom nodded. “Exactly. So, once you get anchored then all you can do is to drill just about dead center between your anchor points. If you need or want to move to the side you have to put in more anchors. We couldn’t carry enough anchors to do much mining and have any room left for the processing equipment.”

Bud looked right at Tom, waiting for the explanation to continue. Finally, Tom blinked and said, “Oh. Right. So, this will be the nose of our mining module. We’ll use the plasma or repelatron engines to keep it forced right down on the surface until it gets its own grip. Then—Bud. Do you remember that movie *Alien*?”

The flyer shuddered recalling how he had snuck the video disc from his parents collection and had watched it as a ten-year-old. It kept him awake for days.

“Su-sure, Tom. Why?”

“Picture the teeth of the alien as they extended out. Our drill head is just the tip of an extendible drill that will dig a shaft twelve feet in diameter and as deep as one hundred feet. Then—”

“Wait, skipper,” Bud interrupted. “That head is twelve feet wide? So, how big is this new ship?”

Tom saved his current work and then called up another 3-D image. This was the outer design of the entire ship. He told his friend the basic dimensions.

As Bud’s jaw dropped, Tom went on to explain how the crew would live and work mostly from the upper ‘sail’ near the back of the ship. The entire front of the main hull was the area such a drill and refinery unit could be “dropped in.”

“For a trip out Pluto’s way we’ll be using the new type of plasma jet engine that I used in the second probe rocket we’ve got speeding out there. We’ll be carrying enough liquid hydrogen to make the

trip under either constant acceleration or deceleration. It will be about one and a quarter Gs of pressure on us which is perfectly acceptable for the short flight.”

Now, Bud did a double take. “Uhhhh... Short flight? But I thought you said that we’re going out to where Pluto is. Or, was. Short trip?”

“Yes, I did say that. And, although it will be longer and slower than the about fourteen days this second probe is taking, we will get there in less than thirty days.”

Tom waited for Bud to calm down a little. “Okay. Here’s the math part, so pay attention. If we just got up to a normal escape velocity of about twenty-five thousand miles per hour, it would take years. But, if we maintain a steady one-point-two-five G acceleration—that means we keep getting faster and faster all the time because the engines keep running—and then travel half way to our destination, all we need to do is to flip the ship back to front and then decelerate at the same rate. By the time we get back to zero speed, we’re there!”

Bud scratched his head before saying, “Just like the probe, huh? So, how long each direction?”

Tom patted the stool next to his worktable inviting his friend to sit down. When Bud was perched on the stool, Tom answered his question. “About fourteen days and five hours, give or take to the halfway point!”

Two minutes later the flier still had said nothing, so Tom explained further.

“If we fly at that ever-increasing speed, we get to the half-way point in just over thirteen days. Now, we won’t actually be doing that because Doc Simpson told me he doesn’t want us to have even that little extra strain on us constantly, so we will make the trip partly at the higher acceleration and partly—maybe an hour out of every six—we’ll coast.”

Bud stood up and walked over to the door. “Be back in a minute,” he said as he walked down the hall. Three minutes later he returned with two ice-cold cans of cola. Setting one in front of Tom he popped the tab on his and drained the can in one breath.

“That’s better. Now, short of me heading over to have wax syringed out of my ears, did I actually hear you say that we can get out there in just under a month?”

“You did and we will. When we are in acceleration mode, we’ll be running the plasma engine full-time. I believe that we will have more than sufficient fuel to get out there, spend up to three days trying to figure out if Pluto is there and invisible, or whatever, and



then get back to Earth before the girls marry other guys!”

They both chuckled, slightly worried, at the thought of what Sandy and Bashalli would think of their two-month-long absence.

Taking a deep breath, Bud pointed back at Tom’s screen. “So, is the new ship going to be that color?” The current rendition was golden.

“Pretty much. That will be a two-micron thick coating of a gold-copper-tungsten alloy that will not only radiate back away from us most of the harmful solar rays, it will also serve to stabilize temperatures just inside the skin of the ship. The alloy transfers heat with great efficiency and that keeps us from developing hot spots. Whatever side the sun’s rays hit will heat up, but the excess will travel around the ship and dissipate into the cooler, non-sun area of space.”

“When do I get to give her a name,” Bud inquired.

“That mining module is already going to be known as the *Sutter*, after the prospector who found gold in California. But, as for the larger craft—”

Bud smiled. “Well, then, prepare to have it forever known as either the *Gabby Hayes* or *The Old Prospector*, professor! Actually, I think that *Sutter* is a pretty good name for the whole thing. Unless you intend to do a lot of exploration in it. In that case I’d vote for *da Gamma* or the *Cook*.”

With that, he turned and left the lab leaving Tom to shake his head in wonder.

“How the heck does he do that,” he asked out loud. “How can he come up with names like that if just a few seconds?”

He finished some of the small details of the crew compartment, including adding the control room view window and wrapping it around both sides. It would allow at least two hundred degrees of direct view from the pilot’s seat. Made from thick, clear tomasite, it would be capable of withstanding a meteor strike of anything up to about a half foot in diameter.

Anything larger than that, he considered, was going to destroy more than the window. It would probably prove fatal to the crew.

Tom raised his head groggily and tried to focus on the clock. 3:17! He grabbed his cell phone and pressed the connect button.

“Tom here. What’s going on, and who is this?” His voice was hoarse and irritated.

A pause on the line was followed by a rather embarrassed young

make voice. “Um, Mr. Swift? This is Michael Jayson at Enterprises. I’m the new night attendant in the radio room. Mr. Dilling said I was to call you immediately. Sorry.”

Now more in control of his voice, Tom asked, “Okay, Michael. I’m not sure I’ve met you yet, but go ahead. What is it?”

“We’ve had a sudden increase in speed on the probe. About an hour ago it began speeding up instead of continuing its slowdown. The first probe did this before it disappeared. Right now it is twenty minutes ahead of arrival schedule and will most likely be a full four hours ahead by the time it is supposed to be stopping.”

Tom’s mind digested this information. “Any indication of a malfunction in the engines?”

“No, sir. Everything else is nominal. Mr. Dilling wanted me to ask if you would like the technicians to increase the engine output to compensate.”

“Give me a second. I’ve got to get out of bed and shake off the cobwebs.” Tom set his phone down, got up and went to the small half bathroom off of his bedroom. After splashing a little cold water in his face he dried off and went back to the phone. “Okay. Thanks for waiting. Are you ready to write something down?”

“Yes. Got paper and pencil right here.”

“Fine. Tell the technicians to do a complete systems check to see if there is enough fuel left to slow down plus the planned return trip cycle. If they say we do, have them perform a couple of five second bursts to slow it, then have them check to see if it speeds up again. That’s it. I’m heading in. See you in about thirty minutes!”

## CHAPTER 12 /

### U-TURN TO THE TRUTH

TOM ENDED the call and pulled his tee shirt and pajama bottoms off. Five minutes later he had taken a lukewarm shower, washed his close-cropped blond hair and was almost finished dressing when a soft knock came on his bedroom door.

Mr. Swift poked his head in, saying, "One of our young radiomen called my cell when you were in the shower to tell you that the techs say there is not enough extra fuel. I told him I'd tell you and get the meaning of it all from you at the same time." He crossed the room and sat on Tom's bed. "So, what's up?"

Tom told him as much as he knew, based on Jayson's report. "So, I guess we have to go see what's up with the probe. If it continues to speed up, we may have to call everything off just to get it back to Earth."

Mr. Swift shook his head. "No. If push comes to shove you need to get as much information from the probe as possible. If it can't be returned, that will be a high price to pay, but the information may be invaluable. It's a trade-off we might have to make."

Tom jumped into his car a few minutes later and raced off. He entered the compound through the main gate as the private entrance would be closed and locked at this early hour. Approaching the Communications building he could see George Dilling getting out of his own car. Tom parked next to him.

"Hey, Tom. Hope you didn't get too angry with our Mr. Jayson. I had to get ready to come in and thought it would be best to get to you sooner."

Tom smiled. "Not a problem. I may have barked at him a little before I fully woke up, but he was a real help."

When they walked into the main radio room, a young man with even shorter hair than Tom's, and bright orange-red at that, stood up and greeted them. After shaking Tom's hand he apologized for the early phone calls to them both. "It looks like there is nothing anyone can do unless we burn off too much fuel."

"Are we getting good telemetry from the probe?" Tom inquired.

Michael nodded. "Yes. Also, the techs decided to activate the entire instruments package early to see what they could find." He looked down at his own feet. "They said there is nothing out there and yet there's some kind of gravity field."

Tom patted the man on the shoulder. "You did good, Michael.

We'll get to the bottom of this. George? I'm heading next door to the telemetry room. Can you and Michael do a communications systems check, please. I want to make absolutely certain that we have full comms out and back. Thanks!"

He turned and left the radio room heading down the hallway to a larger room now packed with seven men and women all looking intently at their individual screens and calling numbers and readouts back and forth. Tom walked up to the lead tech, Annie Sullen.

"Hey, Annie," he said to her.

"Oh, Tom," she replied a little surprised. "Wow. You're early. I guess the new radio kid called you." When Tom nodded, she continued. "Well, something is affecting the entire rocket. It has sped up by about one-point-one percent... and that is increasing. By the time it arrives where it should be stopping, it will be traveling about fifteen hundred kilometers per hour. And that—" she consulted her clipboard, "—will be at eight seventeen this morning instead of just after noon."

Tom's brow furrowed. "I see. And, there really isn't enough leftover fuel to stop it?"

She shrugged. "Of course there is. It's just that anything we burn that lasts more than thirty seconds—and that should only knock off about half of the speed we are going to see—takes away from our ability to recover the rocket like you requested."

Tom's mind raced as he sought to come up with some sort of solution. He brightened. "Get me your best astronavigation person. I want to see if we can burn off enough fuel to slow down and then find a safe path home, possibly using the gravitation of, uh, it is Neptune that's out that general vicinity right now, isn't it?"

Annie smiled and nodded. "I think I see what you're aiming for." She raised her voice and turned back toward the other technicians. "David? Stop fiddling with your knobs and get over here. The skipper has a little project for you."

An older and slightly balding man approached them. He grinned at Tom, greeting him with, "Hi, Tom. You have something interesting for me?"

Tom took the man to one side and explained his plan. It included finding a balance between burning off the necessary fuel to slow down and having enough to take an alternate path back to Earth. By utilizing the gravitational pull of Neptune, Tom hoped to make up for the lack of fuel for propulsion back home.

"Of course, we will need to keep enough to slow it down to go into Earth orbit unless you believe the two repelatron pods can

handle that. And, don't worry about at what altitude. As long as it comes in at the right speed and will remain in any sort of orbit until we can get out to recover it, the accountants will be happy."

Just as Tom was about to leave, his father came striding into the room. "What did I miss?"

Tom grinned. "About everything. I'll tell you on the way to the office."

By the time they arrived it had just gone four-thirty. Tom offered to go to Chow's small kitchen down the hall and make them some coffee. He came back five minutes later with two big mugs.

"I've been thinking," he told his father. "There are only a few scenarios to account for the acceleration. I think we can discount an error in the drive controls. Ditto any thought that the fuel is becoming less efficient and that we could be getting less propulsive force from it. Even if the engines shut down, that would just mean that the probe would drift at pretty much the same speed, not accelerate!"

Damon Swift grinned and nodded. "We're thinking along the same lines. So," he said with a twinkle in his eyes, "what do you supposed is out there?"

Tom grinned back. They *had* been thinking about the same possibility. The only thing that could cause acceleration—outside of the craft swinging back around and firing its own engines—was that something with a gravitational field was pulling the probe.

"I'm not certain. I guess that I need to do some computations to figure out the probably size and density of our gravity source. I hope we can find some logical explanation because the other possibilities begin with something pretty nasty. As in, what if this is the appearance of a small black hole?"

They looked at one another for a full minute as the implications of such an event hit them. "I am hoping that our Earthly science isn't totally off track about that sort of thing. If it were a black hole, and if it swallowed Pluto, then there should have been a gravitational shockwave slamming throughout our system and out for many light years announcing the fact. If we are wrong and that isn't a feature of such an event, then we might be in for a very nasty surprise, and very soon!"

"Right now I want to assume that Pluto hasn't been sucked into a singularity. I'd just like to do the math to see what it would take to pull on the probe."

"I'll help. Perhaps if we work on the problem in tandem, we might arrive at a concurring solution," Damon suggested. Tom agreed. They had done much the same thing when translating early

messages from their space friends.

An hour later Tom sat back, looked up, and rubbed his eyes. It was then he noticed that his father was no longer in the big, shared office. He got up and stepped to the door. Outside, Mr. Swift was talking to their Secretary.

“Oh, Tom. Finished?” Tom nodded. “Great. I did about five minutes ago and thought it best to leave to undisturbed. Coffee?” He pointed at the fresh carafe on Trent’s side table. Again, Tom nodded. Damon poured his son a cup and they re-entered the office.

As they compared their computations, each one stating what they had used as both variables and known quantities, the intercom buzzed. “Yes?” Mr. Swift asked.

Trent’s voice was unusually excited as he replied, “It’s Mr. Dilling in Communications. Something’s happened! Line one.”

Tom jumped to his feet and they both went to his father’s desk. Stabbing a finger down on the blinking button, Damon said, “George. Damon and Tom here. What’s going on?”

“Listen. Sit down. You’ll need to. We received a new chunk of telemetry from the probe. It’s just suddenly swung hard to the left and is racing away from the target area at high speed!”

Instead of receiving the shocked gasps and slew of questions he expected, George heard the two Swifts laughing like school boys.

“Okay. I give. What’s amusing about this?”

Damon told him of their suspicions. “So, this verifies it. There is something out there, at least the same approximate size and density as Pluto—”

“Plus its five moons,” Tom interjected.

“Right. Plus the moons. It is just about exactly where Pluto is supposed to be. And, it is the most likely culprit in our probe’s acceleration and its sudden swerve. Our probe got caught in the gravitational pull of the planetary body and just now probably swung so close to the actual planet that it catapulted off at an angle at increased speed. George. We use that effect all the time to send satellites and probes to other planets.”

He turned to his son and asked, “Is that the results you got?”

Tom smiled and his head bobbed up and down.

“Yes, George. That calculation is verified by Tom and myself. Run it by your people just to make certain. But first, have someone get all the instruments on the probe reporting everything they can, and then plot a corrective course to return the probe to an orbit

around that point.”

An hour later Dilling called back to verify the finding that Pluto, or something exactly like Pluto, was indeed out there and had been the cause of the acceleration and sudden course change.

“We’ve got the probe doing a slow and wide turn to minimize fuel consumption and to get it into an orbit. It will take five days to complete. Oh, and the technician that was computing all the course and speed correction for a return to Earth just told me that it is all out the window. We will not have enough fuel left once this is finished to get the probe back in anything under two years.”

On schedule, five days later, the probe went into orbit around an invisible something. Every sensor onboard was aimed at it and every response was negative, save for one... the gravimeter. It registered the precise numbers they expected. As the probe swung in an elliptical orbit the varying gravity readings indicated that Pluto’s five moons were in place and in their correct orbits.

The only other data they received was from the Earth-facing antenna. As the probe passed behind the anomaly, contact broke off for the anticipated two minutes. More proof that something was there.

Like the first probe sent out, the new one contained a pair of suicide probes. Unlike the first one, these actually had a target to aim for. But, like all other instruments, they utterly failed to give any indication after launch. In fact, as they approached the planetary body, they disappeared.

All that this gave Tom and his technicians was the probable diameter of whatever field was surrounding the planet.

What it did not give them was any reason why it should be there. Or, who—or what—might have placed it there.





## CHAPTER 13 /

### “IT JEST AIN’T RIGHT!”

“SLOW DOWN and give me that again,” Tom demanded from the commander of the space Outpost. “That can’t be right, Ken.”

It had been two weeks since the Pluto probe had gone into orbit around the now-invisible planet.

“Sorry, skipper. Checked and verified by about fifty space prober sweeps of the region. It looks as if Pluto is uncovered and it’s on the move. It is on an almost direct course toward Earth!”

Tom was stunned. The very thing he and his father considered to be the worst case scenario appeared to be coming true. It also meant that some force outside of the solar system was working actively and it seemed to be not in the interests of Earth.

“Do you have enough data to compute a closest point of approach, Ken? And, when?”

Ken Horton, commander of the space station for its entire existence, was not a man given to either panic or rash announcements. Tom knew that he would get no ‘best guess’ from the man.

“We’ve run everything through the computers, Tom. There is almost enough information to give us a solid path. You know how I hate anything other than precise declarations, but here’s what we have. If it holds its current course and apparent speed, it will pass Earth by about one point seven million miles and in about three months. That will be close enough to cause major earthquakes and tsunamis, and could rip this station out of orbit. It won’t do any good to satellites orbiting at lower altitudes either.”

“But,” Tom stated a little shocked at the potential for destruction even a miss would cause, “not a direct hit?”

“No. Now, the good thing is that if it isn’t being controlled and just coming in courtesy of gravity, it will pass us at over two hundred thousand miles per hour. We will be in its sphere of influence for only about three minutes. But, that’s not the only bad news.”

Tom paled as he realized what Ken was talking about. “The Sun!”

Anything as large as Pluto, even as small as it was in the overall scheme of things, that crashed into the Sun would cause major solar flares and might toss off so much solar matter that it could engulf the inner three or four planets.

And, Earth was number three in that set.

Tom thanked Ken and signed off. After filling his father in on the new situation Tom raced to the lab and workshop of Hank Sterling. Hank and a team of ten engineers had been working on building a number of patterns and jigs for the outer hull of the *Sutter*. As each one was completed it went to the Construction Company where the individual panels had been coming off the three-shift assembly lines for two weeks.

More than three quarters of the hull panels and the entire superstructure set were ready to ship into orbit.

Tom pulled Hank aside and told him the news. “What do you think? Can we get her built in time? I’d at least like to offer her as a delivery vehicle for an atomic bomb. Maybe we can pull off the old science fiction trick and knock it farther off course. Heck, we might even get it to swing far enough to go into a tight solar orbit.” He tried to smile, but found that he could not.

“At our current output we should have all the outer hull and at least the plasma drive module up in orbit and put together in seven weeks. Five if Jake Aturian can be convinced to give us another assembly line.”

“I’ll see what dad can do about that. Oh, and if you go to my files you will find a new swing arm for the plasma engines. Dad’s suggestion. It will be like the one for any repelatron module we make—assuming.... Anyway, the three engines will be positioned closer to the centerline of the ship in normal configuration and then will swing more that thirty feet away from the hull when they face within fifteen degrees of forward. That will keep the hull safe from heat but still give us great braking power. What do you think?”

Sterling grinned at his young boss. “Pure genius, skipper. We’ll get on that starting today!”

Everything went into a flurry of action around Enterprises over the next week. And, as busy as the entire organization was, the various governments and news media on the planet were in an even higher state of overdrive and panic.

Tom had to take a day off to go to New York to address the United Nations and to assure them that this phenomenon was going to be no doomsday event. Looking out at the sea of faces Tom began to feel sorry for them. Panic and blind unreason was evident all around the room. Whether it was from ignorance or failure to believe in what he and the entire scientific community were telling them, practically every one of them was soon shouting to gain attention.

The Secretary General had to call in the Sergeant at Arms and his team to restore some order. After a twenty-minute delay, Tom stepped back to the microphone.

“You have to believe the scientific community. All along they have been checking, measuring and computing the same things we have been. And, their results have been identical to what I just told you. In spite of rumors of alien invasions, planned use of Pluto as a weapon of mass destruction, or anything else you may have heard, this is happening because of something we cannot fathom. But, it will not collide with the Earth.”

He waited another two minutes for the loud murmuring to subside.

“Pluto will miss us by at least six times the distance as the Moon currently sits in its orbit. Earth’s gravity is so massive compared to Pluto’s that it should have little or no effect on the Moon. It will, as I stated earlier, cause the oceans to rise and fall fifteen to eighteen feet and that will cause tsunamis. You have many weeks left to evacuate low areas. What I have come to ask for is the following.”

He took a deep breath, recalling how much against the wishes of his father the subject had been when first mentioned. But, Damon Swift was a reasonable man and understood that this was a desperate time requiring a one-time desperate measure and had give Tom permission to broach the subject.

“Swift Enterprises is constructing a giant space ship capable of intercepting Pluto when it is still more than one hundred million miles away. And, that is outside the orbit of Mars. By itself, this ship will be able to accomplish nothing. But, and please do not scream at me about this, if we can be provided with a sufficient *atomic warhead*, one that might give a good push to Pluto and move it even further away, we can go up there, plant it, retreat and set it off.”

His last words were drowned out by the angry shouts of almost a third of the delegates. These mostly represented nations who held beliefs that the United States always had secret plans to take over the world.

With a sad shake of his head, Tom walked away from the podium and down the rear stairs. Minutes later he was being whisked down a special elevator and into a heavily armored car, racing out of the parking lot and to the waiting Skeeter helicopter he had flown in on and had left at the Midtown Skyport twenty blocks away.

By the time he reached Enterprises his mood had gone from sad to angry.

He practically stormed into the shared office and threw himself into his chair.

“I hear things went a little rough for you, Son,” his father calmly stated from his own desk. “I also hear that you handled things very well. Our own Ambassador personally called me to tell you that the friendly nations had a quick caucus of opinions and they are behind your plan. Now, all we have to do is wait to see who will give us the big firecracker and what we may have to give up to receive and use it.”

They talked for an hour about all the implications. Neither wanted to have to resort to such a bold and possibly ineffective course of action. As Damon pointed out, it might all backfire on them.

“If one or more parts of Pluto’s were to break off, they might hit us harder than any glancing gravity wave.”

For another two weeks the construction of the components for the *Sutter* ran at full speed. As large groups were completed they were loaded into two Swift cargo jets plus the cargo modules of the *Super Queen*. These made the trip out to the Pacific Ocean location of Loonau Island and the Swift’s rocket base.

The site had been a hub of activity during the launchings and construction of the various parts of the Outpost in Space, but the main base had been recently downsized and most of the excess land turned over to the islanders in the past two years. It still contained the 12,000-foot runway—used by both the Swift organization and as the main airport for the island nation—and was the supply depot for the weekly rocket supply trips to the Outpost.

Of the six rockets built beyond those that became spokes in the wheel, only two were in use today. The others were slowly cannibalized for spare parts.

It was figured that the two rockets could handle the additional cargo runs over a five-week period by making daily trips.

At the present time, more than half of the pieces for the *Sutter* were in orbit and were constantly being added to the ship’s structure. If everything went according to plan, the ship would be ready for its flight with just one week to spare before Pluto rushed past Earth.

But then, something incredible happened.

“How can it have slowed down?” Tom demanded. “That’s impossible, unless—” He didn’t know what else to say. Ken Horton had called him at about midnight that evening with word that

Pluto, currently passing the orbit of Jupiter, was slowing down. And by more than a little.

“I’m telling you, Tom. We’ve been checking this every minute for the past hour, but the darned planet is slowing down. If it keeps this up it will stop by the time it reaches Mars.”

Tom let out a gasp.

“Hey, skipper? Are you absolutely certain our friends out by Mars aren’t behind this?”

“Ken. To tell you the truth I’m not certain of anything right now. If this is true, and if Pluto does stop, it means that there are greater and more serious spatial engineering and forces at work than we’ve ever seen. Exponentially more than when Nestria arrived.”

He paused to gather his thoughts. “Let me get dad up and then we’ll head in to Enterprises. Can you have all the data sent to his computer in about half an hour?”

Horton agreed and signed off promising to update Tom immediately if anything changed.

Once in their office the two scientists poured over page after page of data and computations. Four hours later they sat back, mentally and physically exhausted but incredibly excited by what they now knew.

Pluto was indeed slowing down. And, it appeared that all five of its moons were no longer with it. Ken had made a special space probe sweep of the old position and had reported with a chuckle, “Those moons are back in home orbit and, get this... they are orbiting around our second probe rocket!”

It made absolutely no sense, but, as Damon put it, “What is making sense?”

At around seven they were both nodding off when the office door opened and Chow came in with his rolling food cart.

“Oops! Sorry,” he tried to whisper in his booming voice. “I’ll come back later.”

“No, Chow. Come on in,” Tom prompted him opening his eyes and looking at the clock. He had dropped off about an hour earlier. “I hope you’ve got a big pot of coffee there. Dad and I have been up since midnight, and that was only after an hour of sleep or so.”

As the chef set out dishes of fresh fruit, bagels, scrambled eggs and a pot of steaming coffee he asked Tom, “What this I hear ‘bout Pluto not a-comin’ ta visit?”

Tom filled him in on the strange behavior and unexplainable actions on the part of the planet. Chow let out a soft whistle. “Golly.

Havin' Pluto way out thar, all invisible, and then a-comin' in like some loco horse at the gallop, and then just sorta stoppin' fer no reason? That makes no sense. It's one o' them, what-cha-call-its, parrot's oxes. Yeah. That's it!"

Tom looked at his father and they both broke into laughter.

"Oh, Chow," Damon told him. "You're priceless. I'm sure you mean that it is a paradox." Chow nodded, looking a little embarrassed. "It certainly is. Just about everything about it is a paradox. We may have to get Pluto renamed to Winkler's Paradox."

Smiling, Tom added, "It's sure better than being demeaned by now being no longer good enough to be considered a planet!"

Three days later the newest reports from the Outpost plus numerous Earthbound observatories showed that Pluto, rather than performing the impossible feat of stopping, was swinging into an orbital position about two-thirds of the way between Jupiter's orbit and that of the asteroid belt.

Five more days proved this to be absolutely the case. It had taken up position at a point where most astrophysicists agreed it could maintain position without unduly influencing any of the asteroids or any of the planets that might have relatively close orbital paths.

There was another thing that was puzzling to everyone. Pluto was now almost five percent larger than any previous measurements. It was an equal extension to the size of the body except right at its poles where it remained the same as before.

"Well, it looks like my trip to blow Pluto out of the way is not going to be necessary. I'd still like to finish the *Sutter* as quickly as possible and go explore it," Tom told his parents and Sandy at dinner that evening.

"Don't plan on taking Bud with you too soon," Sandy warned him as she dabbed her mouth with a napkin. "I've been getting mighty used to him being around these past two plus months and won't take kindly to you ripping him from my bosom."

"Sandra Swift!" her mother practically shrieked. "You will not use words like that until... uh... well, until you and Bud have a place of your own. My god!"

As Sandy sought to look innocent and sweet, Tom and Damon broke up onto gales of laughter. Anne Swift was one of the most progressive women they knew, yet she had a Victorian streak in her when it came to her daughter and her maturation.

Sandy, for her part, knew full well what buttons to push to get the best results from her mother.

“I think you’ll have a few more weeks, San,” Tom assured her once he managed to catch his breath. “Heck. I don’t even have a crew picked out. Besides, we will only be gone about three weeks now. I recomputed the travel times and it will be about nine and a half days to get there, maybe two or three to explore it and see if my mining module for the *Sutter* works, and then the same travel time back.”

When his mother asked how that was possible he and Damon took turns explaining the physics of constant acceleration/deceleration. While they both knew that she was an amazing scientist, her field was biological and not astrological.

“Well, that sounds a little uncomfortable, but I’m glad it will be a quick trip.”

When Tom arrived at the office the following morning he asked his father, “Is there any way that I can use your nano-coolant technology to create a power plant for the repelatron version of the *Sutter*? Not that I’m going to need it now, but I’m thinking that we might want to set up a long-term mining program in the asteroid belt. We wouldn’t need the plasma drive for that—no real need for speed—but it would be nice to have a good sized, high-output reactor providing power.”

Damon Swift considered his son’s question. “Are you certain you would need it? Out in space you could just run one of the coolant pipes outside the ship and let the icy vacuum of space draw off the excess heat.”

“Yes, I could do that, but I would like to build a reactor that practically fills the drive module. I have been toying with improvements to the repelatrons and will need lots of power. Probably three times what the *Challenger* consumes. That will mean a larger cooling jacket and the need to draw off even more heat. Unless I want to hang radiators all over the outside I think I need what your system promises. Plus, I would hate to have to come up with all the equipment necessary to connect and disconnect all those pipes every time we want to remove either of the modules. But, as I said, that’s in the future.”

“As long as the future is many months or a year away, I may have things all figured out by then. I’m still crossing my fingers that we can go the liquid helium route, but that’s not looking very likely. By the way, and on a different subject, your two little suicide probes, the ones that just disappeared, have sent back their reports.”

Tom’s eyes went wide. “They actually got to the surface then?”

“They did apparently and their little lasers and spectrographs have sent back some interesting information. I have to admit that it

arrived the first time about concurrent with Pluto's racing toward us and everyone had their minds on that. Nobody thought anything of the raw data until the probes resent it yesterday." Damon picked up the seven-page report that had just been forwarded by one of the labs. "I was just about to take a good look at this." He handed it to Tom.

"What's is it, Dad?" He looked through it. "Oh. I see. It's the report of all the elements and mineral found by those probes. There are some pretty mundane things in it. Iron, manganese and sulfur make up a lot of it, but there are also more than just traces of things like platinum, titanium, vanadium and rhenium. Then it just gets into traces of gold and lead and—"

"Wait! Did you just say vanadium and rhenium? How much?"

Tom glanced at the list. "Yes. One probe appears to have broken through a layer of vanadium before encountering some rhenium. From the compaction of it, that top layer could be several feet thick. No idea on the bottom one, though. Why?"

"Before I answer that, how heavy do we believe that new enlargement of the surface to be?" Mr. Swift was looking rather excited now, so Tom looked at a report on his tablet computer.

"As much as nine hundred million tons. According to this list at least ten percent of that is frozen water, methane and, would you believe it, radon with traces of neon on the surface. Now will you tell me what this is about?"

Damon Swift held up a finger. "Just a second." He entered a few keystrokes on his computer and then sat back with a big smile. "That's a potential of over ninety thousand tons of vanadium." He rubbed his hands together. "And, who knows how much rhenium is there!"

Tom tried to think of what he knew about the second element. It was a metal and it was on the Periodic Table at number seventy-four... no, that wasn't right, it was seventy-five. Although not one of the more abundant metals on the planet, it did have some industrial uses. Now that he thought about it, Swift Enterprises used about two tons of it every year to strengthen several of their proprietary alloys including the magnetanium used in all Swift turbine engines.

"Okay, so we use it and a lot of companies do. Why are you so excited about it?"

"Because, the cost of rhenium doubled two years ago, doubled again last year and is tripling by the end of this year. In truth, the Earth just doesn't have enough to go around and new uses are being discovered on an almost weekly basis. It is so expensive now



that I've got the Metallurgy Department trying to find a substitute.”

Now it sank into Tom's mind.

“You're thinking what a great find it would be to go mine that, right?”

Damon nodded and smiled again. He began detailing one of the more fantastic applications just on the horizon. “I've been experimenting with a new generation of batteries, Son. You will recall I spoke about new uses for vanadium several months ago. Pardon me for having to tell you this, but if I can get things right, your Solar Batteries are going to be dinosaurs. Imagine batteries the size of current D-cells capable of one hundred times greater capacity, one fifth the weight, ten times the amperage letting it provide three or even six volts at a steady rate over a period of three months!”

Tom's jaw dropped slightly. He had read a paper several months back about a similar application, but very little had stuck with him.

Mr. Swift continued. “When perfected, that battery will be able to be recharged to full capacity in about one hour and will still have ninety-five percent of that charge just sitting on a shelf for a full year. And,” he gave his son a smile, “in theory you could recharge it at least a thousand times.”

Tom slowly shook his head, but had to return his father's smile. “I guess you're right. Assuming that your small battery can be scaled up and output the fifty-four volts our largest batteries do, then I'm going to have to find a tenant or two to take over our manufacturing spokes up at the Outpost.”

For the following hour they sat and discussed what the older inventor had been doing around the use of rhenium. On two occasions, Tom had asked questions that made Damon Swift stop and scribble notes, muttering things like, “Hmmm. Hadn't thought about that,” and, “That makes sense!”

As Tom rose to leave for a date with Bashalli, Damon said, “It's just too bad that your chunk out there doesn't hold a vast reservoir of liquid Helium.”

Tom turned back and looked at him with a questioning face. It was the second time his father had verbally lamented about helium.

“Unless you have to run, you ought to sit and hear the bad news, Tom.” As he looked at the younger inventor, Tom could see that his father was very troubled about something.

“Dad,” he began, “if it has to do with the amount of money I've been spending, I mean if the company is having some financial issues, I can put most of my projects on hold for a month or more

and concentrate on bringing in some cash. The Pluto flight seems like it can wait—”

Damon Swift laughed in spite of the seriousness of what he wanted to relate. “Oh, good grief, Tom. In the past six months alone you have managed to complete three cash cows for us. Those galloping mechanical horse replacements for the Texas Rangers and the robotic Forest Rangers for the National Parks Service more than offset your project spending in the entire past year. And that secret *SeaSpear* project you did for the British government—now that those are rolling off the assembly line—is beginning to get very lucrative. No, what I’m about to tell you has nothing directly relating to money, although—now that I come to think about it—it actually does.”

Mr. Swift licked his lips before telling Tom, “Peter Crumwald sent me a message this morning before you got here. The wells at Helium City have all but dried up!”

## CHAPTER 14 /

### YES, WE HAVE NO HELIUM

TOTAL DISBELIEF crossed Tom's face. "I thought Peter shut the wells down and was doing a complete check. Is there some sort of leak?"

Damon shook his head. "It appears the helium is going somewhere, but it certainly isn't bubbling up through some crack or fissure. There are no signs of any bubbles. Peter is at a total loss for what is happening. Frankly, I am as well. While it is true that we have never known how much helium was down there, every computation we could make—based both on oil and gas industry standards plus our own guesswork—has indicated that we might have anywhere from ten to twenty-five years of it. Now—?" He shook his head.

Tom and Bud hopped aboard the Toad twenty minutes later and flew over to Fearing Island. There, they checked out a seacopter and headed for Helium City. As they descended, Tom made a call ahead to notify Peter Crumwald. He was at the airlock when then stepped out.

Tom had never seen him looking more defeated than right now. His shoulders were sloped and he seemed to walk with a slight stoop.

In his office he looked at the boys across his desk. "Tom. I can't apologize enough for all this. I don't know what to do." He sounded on the verge of tears.

"For starters, don't blame yourself. If the U.N. hadn't pushed their noses in and let that Samson take over here for a couple months, you might have easily gotten to the bottom of the mystery before it got this far. I'm just down here to see if I can figure a way to help you."

He explained about the Pluto situation and his forthcoming trip in the *Sutter*, "But, I have a couple weeks to see if I can come up with anything. The one thing that would be nice is if I could go down into the actual well, but that isn't practical."

"How about one of your probes, like the ones you sent out to Pluto?" Bud suggested.

"Bud, there's no way something like those probes could tell us anything—" he stopped, tilted his head and turned it so that he was looking right at his friend. Bringing his head back upright, he said, "Ummm, you weren't speaking specifically, were you? You mean

some sort of probe that would be just for this use. Right?”

Bud smiled and his head nodded up and down.

Turning to face their host, Tom said, “Mr. Crumwald. Let me introduce you to one of the big reasons everyone thinks I’m a genius. I surround myself with these miracle mavens, and look what it gets me!”

He outlined a plan to construct a probe small enough to be pushed through the main shaft pipe of the well. Although a small amount of gas might be lost in the process he also planned to replace the upper cap with a new one incorporating a sealed pulley and cable system to not only lower the probe, but to power it and send back video and RADAR echo scans of the cavern below their feet.

“If nothing else we will see what is actually down there. And, if I am able to do something I think might be possible I should be able to fly the probe around down there and get a wide view of everything.”

Tom asked for copies of all the documentation for the wellhead equipment and the valve system. While Peter’s assistant was working on that the three men headed over to the main well. It was actually one of three, but had been the only one in use for more than a year. The others were kept ready to take over in case of any problems, and for those times when maintenance meant the main well needed to be shut down for any period of time.

Tom took detailed notes of what they saw while Bud used his camera phone to photograph the well from many angles as well as the surrounding area. As Tom has stated: it wouldn’t do to come up with a solution if it meant it couldn’t fit in the available space. Since the U.N. charter insisted on a security enclosure for each of the wells, it was important to get things right the first time. Doors could not be moved and buildings could not be taken apart. Tom made numerous measurements and calculated angles.

They picked up the folder of documents and bid Peter goodbye. After surfacing, Tom radioed his father with his ideas.

“Sounds interesting, Son. It will be about time to get a look at what’s actually down there. Say, while I have you on the radio I have some interesting news. You will remember your little address to the U.N. and the outpouring of love and support you received before having to be spirited out in an armored car. Correct?”

Tom could imagine his father smiling and he also smiled at the memory. It was a sore spot for him, but there was little to be done. In the end the U.N. had to put it to a vote within the Security Council, and with two nations rejecting the idea, any hopes of

getting an atomic warhead had vaporized.

It was now a seemingly moot point, so Tom asked what the information might be.

“Well, we have been offered one anyway. I can’t tell you by whom, at least not via radio, but I can tell you that it is an earnest offer. A little late, but it is an offer. I told them, of course, of the change in status and they suggested that the offer would remain open for as long as it takes us to decide. What do you think of that?”

Tom didn’t know what to think. He also didn’t know what might happen if he ever did take up the offer of such a weapon and use it to save the world. Would he be viewed a hero or a monster?

By the time the following Monday rolled around Tom had spent five days designing a tethered, flying probe for the helium well. Looking more like a dragonfly with four puffy wings and a pusher propeller resembling a three-bladed feathery ceiling fan, the entire thing folded around a central tube containing a cylinder of helium to give the entire thing—once the wings and prop were inflated—close to neutral buoyancy, a light yet powerful lithium-air battery to power all the electronics, and a small and powerful electric motor for the prop.

At almost fifteen feet in length, folded, it would just fit inside the upper well chamber.

As he intended, the replacement cap and pulley would lower the probe into the gaseous abyss and remain attached to provide power to the RADAR system and the rest of the probe as it slowly flew around in increasing circles to map the interior of the cavern. Once their job was finished, the RADAR equipment would drop away saving almost fifteen pounds of excess weight.

The computer could then turn on the infrared camera and light system, get up to proper flying speed and disconnect from the tether. Once detached, it would never be able to be retrieved. But Tom believed that during the almost twenty minutes of flying time it would have on battery power, the camera would transmit enough visual data to an antenna built into the now needless tether that he could get almost a better idea of the topography down there than if he were to stick his head into the cavern.

All that was left was to turn the design over to a small team of engineers who would see that it got built and tested and met Tom’s specifications.

With that now off his plate Tom decided to take a trip up to the Outpost to see how the *Sutter* was coming along. With the *Challenger* now out of its refit, it was the best and quickest way to

get up there. He and Bud, along with Zimby Cox as back-up pilot, arrived at the Outpost in time for lunch. When they approached the space station Tom was a bit surprised to see no signs of work taking place on the large spaceship.

Of course, he considered, with the outside hull complete, all work might be going on inside.

He was even more surprised when they entered the main hub of the station only to find it deserted.

The three men looked at each other in alarm.

“They answered the radio call when we came up, right?” Bud asked.

“Yes,” Tom answered. “Hello?” he called out.

With a rush of laughter, about fifty men and the four women assigned to the station came tumbling out of all the spokes, even the one they had entered through. Everyone seemed to be laughing and shouting greetings at the same time. Very soon, Tom, Bud and Zimby were also laughing as they were filled in on the good news.

“The entire outer hull and living quarters are finished, Tom,” Ken Horton told them. “Well, except for one little missing piece. Uh, actually a dozen missing pieces. We still need those acceleration couches. And, you wouldn’t have seen the drive module because it is parked almost exactly on the opposite side of the hull.”

“That’s incredible, Ken. Hey, everyone,” Tom shouted to get their attention. When they quieted down, he said, “You can’t imagine how grateful I am that you’ve pulled off the all but impossible here. The front mining module will be coming up in pieces starting day after tomorrow, and Doc Simpson and I have a good start on the furniture for the crew. Those will be about the last thing to go in. Thanks!” He knew the promise of the couches was a stretch of the truth—in truth he had forgotten them—so he made a mental note to get on that upon their return.

After lunch Ken and two of his lead construction men floated over to the giant golden ship with Tom and Bud. Zimby, who was an incredible pilot, and didn’t mind being inside a spaceship, had an issue with floating across any distance out in space. He begged off saying that he would tether himself to Bud when the time came to go over and take off.

After entering the ship through a five-man airlock at the back of the “sail,” they found themselves on the lowest level of the crew section. An open-front elevator and a ladder faced them across the small open area and a hatch was set on either side of the forward bulkhead.

“Those lead to the large open room, Bud,” Tom told him. “It’s the area you’ll probably call the rec room or something.” Tom reached out and grabbed a rung on the ladder and began pulling himself up. The zero gravity meant that very little exertion got them all up to the top level quickly.

“I meant to ask you down below, skipper,” Bud began, “but what the heck are all those dimples in the ceiling. I’m seeing them up here in this corridor and the rear wall as well. What gives?”

Tom and Ken shared a grin. “Those, my dear Budworth, are a surprise!” he teased. “Actually, those are tiny low-power repelatron emitters. They are going to give us a form of gravity onboard, all except in the shafts that have the three ladders. I figure that it will be nice to be able to float up or down in those.”

He explained a piece of special clothing the crew would be using. Each man would wear a snug-fitting body suit under their one-piece coveralls. It had tiny fibers of a special alloy woven throughout that the emitters were tuned to repel. The body suit would run from neck to ankle and its close proximity to the skin would aid in the feeling of all-over gravitational pull. The soft-soled shoes they would wear would have a higher level of the alloy in them to keep the, as Tom put it, “Feet down.”

“The effect of having everything surrounding you being pushed gently toward the floor is that you have apparent gravity. Only about half that of Earth’s, but it’s something. Down in the large room—okay, give it a name, Bud.”

But thought for a moment before he gave Tom a sly look and told him, “How about The Expanse. Since it is the widest and longest area on the ship, it’s either that or a dull name like Multi-purpose Room.”

“Fine. The Expanse it is. So, The Expanse will be a special area with full Earth gravity. That way you can go down and exercise and maintain your muscle mass.”

Ken stepped forward and tapped a code into a pad next to the hatch marked COCKPIT. With no atmosphere yet inside they could not hear the inflatable seals being pulled back, unsealing the hatch, but it soon slid silently to the side. They entered and Bud had to reach out to hold onto the doorframe.

In front of them were the pilot and co-pilot stations that faced a wrap-around control panel. It was actually one giant touch-sensitive video screen that displayed every instrument and readout they would need. With no acceleration couches in place—the mounts were part of the deck so they could tell exactly where those would go—they could see the entire panel. It was about three feet high with areas for their legs to go under the panel, and almost ten

feet wide.

Behind those two stations were two additional mounts for the extra couches the ship would carry, and near either end of the panel were smaller mounts for auxiliary seats for the operators of the forward replaceable module.

But, the most amazing aspect of the room was the absolutely clear wrap-around tomasite window. Starting only a little way into the cockpit and running both around and from floor to ceiling, they could all see what lay outside the ship. In its current orientation that meant that the Earth filled a little of the right side and the Moon was brightly visible up and to the left.

In a whisper that barely came through their radios, Bud said, "Jetz! It's beautiful, Tom." And he went silent.

As they toured the ship Tom pointed out the various rooms. "Each one is normally sealed just like the water-tight compartments on a ship. You can run with doors open if you want, but a sensor array will scan all around the ship. If anything is detected coming in, the alarms go off and you have three seconds to get out of the way before they close and seal."

Bud said nothing until they entered the giant internal bay where both the mining and drive modules would be installed. It was huge and open at both ends. As he floated in it he wiggled his shoulders to rotate slightly and face Tom. "It reminds me of the old *Spruce Goose* plane. A whole lot bigger, but an incredible sight when you poke your head inside. One of those, 'If you think it's big on the outside, just take a look inside' sort of things."

Once back on the station and out of their suits, Tom shook Ken's hand. "It's wonderful, Ken. Better than I imagined when I designed her!"

Bud went off to tell Zimby what he had missed while Tom made a few calls down to Enterprises and Loonau. When he finished he told the station commander, "I've just set things up so you and the construction team get two days off, then everything for the modules will come up on an increased schedule. I hope that's okay."

"Heck yes, Tom. And, thanks for the time off. The men have been putting in record time over there and can use the breather, even if they might be loathe to admit it. One thing, though. Can you arrange to have an extra tank of O<sub>2</sub> sent up? Even with reclamation efforts we're getting down to the point where I might have to authorize pulling from the station's emergency stores. I'd prefer to not do that."

Tom agreed to arrange for the tank to be part of the first or second rocket up after the break.



After saying their goodbyes, the three departed the station and floated over to the *Challenger*. Zimby kept his eyes mostly closed, only peeking periodically to ensure his trajectory was correct.

As they climbed up to the control room, Bud shook his head. “I used to think this old girl was huge. And, in some ways she still is, but that *Sutter* is a mind blower!”

Back at Enterprises the next morning Tom received a call from Arvid Hanson.

“Tom. That flying probe you designed for the helium well is ready. Do you have the time to take it down there? If not, Hank and I can do the job. I know you’ve got a plate full right now.”

Tom thought about it and agreed. “No. You two go ahead and take it down. If you can arrange for an uplink so I can follow along with the data and video in real time, that would be great. Thanks, Arv.”

With that now taken care of, for the time being at least, Tom looked through the notes he had been accumulating on his tablet computer. Of the more than three hundred that had been added at one time or another, only seventeen remained. Tom let out a muffled, “Oops!” when he saw the top one.

#### • **Work with Doc on the couches**

He made a call to the Dispensary and arranged a time to come over. Two hours later he and Doc were sitting in the medico’s office looking at a series of sketches and computer drawings.

“The biggest thing is, Tom, that these must support the body in the same way floating on water would. Completely and evenly at all points. Now, I could just toss in a big bag of water into a body-sized bucket, but that wouldn’t work very well in the long run. Everything would squish to the sides and leave the man lying on the surface beneath.”

“So, these need to be fully supportive without letting whatever is inside move around. Hmmm. You know, I think I have an idea. Give me a day to put something together, okay?”

Doc nodded. “Sure. No hurry at all. Just have to have them designed and built before you take off, that’s all.” He smiled sweetly at Tom.

“I swear that by four tomorrow afternoon I’ll have at least one possible solution,” Tom promised.

The next day he called Doc Simpson. “Can you come to my big lab in the Admin building, Doc?”

“Gee, Tom. Well, I’ve got all these warts to remove and bunions to reduce, uh... *of course* I can come over! See you in three.” The

phone went dead.

Tom barely had things set up when Doc arrived. “Show me the goodies!” he requested, rubbing his hands together.

“I can do your one better, Doc. I’ll let you demonstrate it yourself. Take off your shoes, please, then stand next to this covered object.” He indicated a low rectangular shape covered with a white sheet. When Doc did as instructed, Tom told him to turn around.

“Don’t peek, now. Just stand there. Good. Now, shut your eyes for a moment.” Doc could hear the sheet being pulled off of whatever it was on the floor behind him. “Also good. Okay, you can open them but stay where you are and don’t look around. I hope you trust me because the next part is going to take a lot of what you’ve got. I want you to cross your hands over your chest...”

“Like I’m about to be laid into a coffin?” Doc guessed with a grin.

“Kind of. Now, let yourself just fall straight back. Don’t bend, just flop onto your back!”

Doc looked up to the ceiling and muttered a silent prayer. He trusted Tom implicitly, but like most people he had a fear of falling. This wasn’t helping. He took a gulp, closed his eyes again and let himself tilt backward. He barely felt the impact. In fact, he could barely feel anything as he lay there, now horizontal, on something that felt... felt... well, he couldn’t decide what it felt like because it had almost no feeling.

“Okay, I give up. What the heck am I laying in, Tom?”

The inventor reached down and helped the medico sit up and then rise to his feet. “That, Doc, is what I hope you will approve for the acceleration couches,” he stated. “I’d like to introduce you to ACHE gel. That’s short for Acceleration Couch Hydrolyzed Envelope. It’s something I actually came up with more than a year ago, but have never had a good use to put it to. I used to just call it Goo.”

As Doc examined the intricate arrangement of interconnected tubes and octagons, Tom explained that the gel was made from a hydrolyzed coconut oil gel infused with billions of nano particles of copper and zinc. Acting like the inside of a battery, if power were sent through the gel these particles instantly aligned at very specific distances, effectively causing the gel to stiffen. Yet, because the gel was kept at about 99-degrees—a fraction above body temperature—the gel remained semi pliable.

The end result was an incredibly supportive medium that could be “relaxed” at anytime and even moved around.

“I’ve put it in all those tubes to distribute things around without allowing it to move too much. Hopefully I can come up with a pump and chamber system to inflate and deflate it as needed at a later date. For now I’m afraid this is what I can do. You do have to admit it is pretty comfortable stuff,” he stated.

Doc could only smile and shake his head in wonder. “All you can do, huh? The only thing I might suggest is that you build up a few more inches around the top at the sides. Perhaps even get it to curve over an inch or two to provide for total side-to-side support. Oh, and is it possible to bend the platform underneath?”

“It should be. All you would need to do is to cut the power and let the gel soften back up, and then use a series of motors in the frame to set the new position before activating it again. I should have mentioned this, but it gets stiffer the more power you send through. I can put just enough in there to keep the gel from moving around or squishing out from under someone yet pliable enough to quickly change the seat configuration.”

“Well, I’d say that my work is done here,” Doc said in a somber voice, “but I haven’t actually done anything. This is all you. Is there something I can do to help from this point?” he asked.

“Yeah. If you could work with Hank Sterling and his team to come up with the actual seat mechanism, and to build the pads like these—or any better configuration you might think of—then I can finish up all the other little bits on the ship.”

Doc agreed and left a minute later.

Tom walked down the hall and bumped into Harlan Ames coming from the opposite direction.

“Tom. Good. I need to speak you and your dad.”

“What about?” Tom asked as he turned the knob opened the door.

“About the Damien Goosens impostor. The final tally is in. He didn’t kill himself; *he was murdered!*”



## CHAPTER 15 /

### NEW POSSIBILITIES

“MURDERED?” both Tom and Damon gasped. Mr. Swift had been concentrating on something on his computer but had heard the final part of the conversation.

“How could he have been *murdered*? Do we have some enemy agent down at Helium City?” he demanded to know.

“I really don’t think so, Damon. The specialist at Bethesda Naval Hospital did a thorough scan of all his body and fluids. They found something. Something that must have been in there from just before he arrived, and that worked over time to do the trick.”

“What was it?” Tom asked.

“Well, first let me tell you a little about Damien Goosens. Right now he is languishing in a Federal prison. The man you saved *is* the actual Goosens, it is just that he is a little known hit man in the Ukrainian Mafia. His story has changed, too. He was hired to kill you, Tom, if and when you came down to Helium City to investigate the situation. The thing is, he had a change of heart. Then, he made a mistake and told Atlas Samson about not wanting to go through with it. He wasn’t supposed to be the new manager down there, Van Austerman was all along. The problem is that Van Austerman’s name popped up on an Interpol watch list. Goosens was not on the list, so Samson must have figured he’d put his chosen man down there, but with a ‘clean’ name and reputation.

“So why kill him?” Damon asked.

“Goosens provided that answer. He had distrusted Van Austerman all along and used the slow-acting poison on him—the stuff meant for you—before Samson had him hogtied and dumped at the gold city. The actual bad guy put the hit on the phony bad guy. The general opinion is that if he hadn’t been captured and abandoned, he might have done the same thing to Samson!”

Tom looked at his father. They both slowly shook their heads. It was practically unbelievable. Certainly it was the stuff of mediocre mystery stories.

Tom asked, “What was the poison he used?”

Harlan shrugged. “I don’t know and they aren’t telling. My guess is that it is some insidious concoction of slow poisons and possibly a radioactive isotope. As one worked to kill him the other slowly made him lose his grasp on reality. That would explain his reported behavior.”

"I just wish it could explain where all the helium went down there," Mr. Swift stated in a grumble. The loss of a viable helium supply had placed a great mental strain on him. Even with Tom's assistance and his old research, he was getting more push back from the NRC on alternate reactor cooling methods than he could overcome.

It was getting near to the time when he intended to announce that he was abandoning the cooling well reactor project. It would be both a personal and financial disaster for him and Enterprises.

Tom tried to brighten the mood a little. "I've got a team down there about ready to launch an underground flying probe. If all goes well, we'll have a really good idea of what's going on by this time tomorrow."

"What do you think you'll find?" Harlan asked.

"I have absolutely no idea," Tom replied. "When we discovered those helium bubbles and built the well, we never had a way or took the opportunity to find a way to take a look. We did some soundings that told us there was a cavern down there, but couldn't tell how large it is. All we knew was the pressure the helium wanted to come out at told us what the potential amount was. Heck. For all we knew back then it could have been an inexhaustible supply or one that would last just a year or so."

"What we didn't want to see is what we now face. The end of the supply," Damon said in a tired and sad voice. "I only hope that Tom's probe can tell us what's going on. I'd be quite happy to discover that there is a simple blockage in the well's piping." He knew that wasn't going to prove to be the case as the other backup wellheads had been opened with identical results to the main one.

Once Harlan left, Tom decided to make a check of everything that remained to do for both the construction of the *Sutter* as well as for the mission ahead. It only took an hour for him to find out that just about everything was either on or ahead of schedule. After glancing at his watch he decided to head home.

When he opened the front door and stepped into his house he almost fell back outside as Bashalli rushed him and threw her arms around him.

"Oh, gawd!" Sandy's voice came from behind them in a shocked tone. "Is that what Bud and I look like? Ick!" As they both turned to face her, she broke into giggles. "Kidding. You two look like you were made for each other. And, I am not jealous. Really." She walked into the kitchen still muttering to herself.

"It's a beautiful afternoon. Let's go out back," Tom suggested. Bashalli took his hand and led the way out the back door, across

the patio and past the small, now sadly neglected, shed that had been home to some of Tom's earliest inventions.

Tom kicked aside some of the leaves that peppered the ground and checked the grass. It was dry, so they sat right down on it.

"There is one thing that I am not certain I understand, Tom," Bashalli said as they sat underneath the large chestnut tree. "It has to do with something my uncle told me when I was a little girl in Pakistan watching a group of men dig out a large rock pit."

Tom pulled away a little so he could look into her eyes. He asked, "What's that?"

"Well, as the men were digging—and no, it was not by hand... they had a digging machine—they dumped everything into a large truck. My uncle said to me, 'Bashi, my dear child. Look at them carefully. Those men are fools. See the way they just toss everything in like that? They will only be able to carry a little more than half what that truck is capable of.' And, when I asked him why, he told me it was because along with rocks and dirt they were loading the truck full of emptiness."

Tom chuckled. He could see what the older man must have meant, but he waited for Bashalli to finish.

"When I asked what that meant he told me that I must wait for the answer until it came to me of its own free will. It was very frustrating, but it did find a way into my head about six years ago. It is silly and you probably already know it, but it was an incredible moment for me when I realized the truth and simplicity of the answer."

Tom hugged her shoulders. "He meant all the air space they were leaving, right?"

She nodded her head. "Yes. And so, I now have a question for you. I am not an ignorant child these days and I do understand the nature of outer space being a vacuum, but does that vacuum pull anything your new mining spaceship collects together? Or, does it leave gaps of vacuum? And, what occurs when you open the containers up once you return to me... I mean to the planet?"

Tom laughed. "A question? Sounds like at least three. Let me see what I can tell you. To start, if we pile in lots of loose rocks with spaces, there will be vacuum in there until we open things to the atmosphere. That means—" He stopped. "You were getting to something with this, weren't you."

Bashalli sat up and spun to face him. She took his hands in hers and replied, "When I phoned my uncle and told him I finally understood, he said, 'Then you can see that if they simply broke everything down into tiny pieces and then pushed them together,

they could have carried almost one third more in that truck.' Does your mining ship have a way to do that?"

Tom had to shake his head. "No. It isn't anything we believed we might require. We take in the ore materials at the front, crush it, and use electromagnetic heat to melt it down. Usable metals flow away and into holding bins and the excess rocks and debris are pushed out the side and back onto the planet." His brow furrowed and he pursed his lips. "Of course, that only works if we are bringing back materials we can actually refine and melt, like metals. Gosh. If we go after something that is more like rocky ore we sort through later, we'd only be able to carry a full load if we had normal gravity. Or more! With Pluto's reduced gravity nothing will pack itself down." He leaned forward and kissed her before standing up and helping her to her feet. "Bash. You are the cleverest woman I've ever known. You and your uncle are geniuses!"

He ran toward the house calling back that he had to make a phone call and would be back. He did come back ten minutes later with tall glasses of lemonade.

"I just got off the phone with the mineralogists. They agree with you and will get started with Hank's engineering team on a special addition to the crusher tomorrow. Good thing you mentioned it today because we wouldn't have time to build it before take-off otherwise."

It proved to be relatively easy. The current pair of crushing rollers could be adjusted to keep the largest pieces at about an inch or smaller. If it was full of metals, those could be fed into the smelter and usable portions separated under great heat. If the collected ore didn't go to the smelting area it would travel along a conveyor system and be placed in one of the five holds. The addition of a new load tamper—basically like a giant hydraulic garbage compactor—would ensure that the maximum amount of load could be achieved.

"We had to re-engineer the covers on the holding containers, Tom," one of the line managers at the Construction Company told him, "to accommodate the hydraulics and the presser pad, but it all works. Looks a little like one of those old-fashioned potato masher and ricer things, but it should do the trick."

"Were you able to estimate the compaction it can give us?"

"I tried to do the math, but the Pluto gravity and unknown composition sort of did me in. The best guesstimate I can give is that you should achieve between ninety and ninety-four percent load efficiency versus what we computed to be around seventy-three to seventy-eight before. As long as you can handle the extra weight up



there, it'll work.”

Tom gave a rueful little chuckle. “It’s not the ‘up there’ I’m worried about. It’s the getting those containers back to Earth with the extra weight.”

It was one of the things that had been keeping Tom awake the past several nights. Depending on what they were bringing back, the additional weight made possible by Bashalli’s suggested compactor could add five tons to each of the five holding containers. The return shuttle he had under construction right now was designed to launch using three outboard-mounted solid fuel boosters that would get the container transport into orbit at about five hundred miles.

A built-in articulated armature inside the swing-away nose cone would grab a container as it was offloaded from the *Sutter*—or possible left in a holding orbit as the mining ship headed out on another journey—and draw it into the cargo capsule. Once sealed, it would de-orbit and parachute to a landing spot to be determined.

The trouble came with the weight the parachutes could manage and the safety margins Tom needed to figure in case of one chute failing.

The answer came from an unlikely source. Chow Winkler.

As Tom was sitting down to breakfast one morning, the western cook knocked on the office door. He had left moments earlier after having delivered food for Tom.

“Pardon me, Tom,” he requested. “I had one thing just come into my head an’ I thought I’d ask ya ‘bout it.” He stood there practically wringing his chef’s hat. Now that Tom came to look, Chow was not wearing one of his fancy western shirts. Today he was attired in a sedate cotton plaid and simple blue jeans. That just wasn’t the Chow he knew.

Tom could see the older man struggling to find a way to ask his question. It would do no good to hurry Chow, so Tom sat back and waited. It took almost a minute for the man to begin talking again.

“Ya see, I’ve been feelin’ a might left out on a couple-a your latest outings, an’ I got me the idea it’s because I may be slowin’ ya down, what with bein’ all fat an’ such. So, my question is this... if’n I was ta drop a hunk o’ this belly o’ mine and get in a bunch more exercise, would ya take me along with ya?”

Tom could feel tears rise in his eyes. Chow Winkler adored his young boss and the feelings were mutual. But, the Texan was right. Tom had left him behind on a few recent excursions. Now, Tom racked his brain to remember if any of those times had been because of Chow’s size or weight.

“Chow. In all honesty I believe that I’ve not included you only on those times we either didn’t have the luxury of space for you and your great food, and once because I knew we were going to get into potential trouble and didn’t want you to come to harm. And, maybe, if I am honest with myself, it might have had to do with you not being as quick as you were a few years ago.”

Chow nodded. “That’s what I thought, too, but Buddy Boy was tellin’ me the other day that you was all set on makin’ doors and entry hatches smaller and I wouldn’t fit my gut through ‘em!”

Tom wanted to roar with laughter. Bud was always joshing the big man, but it looked like he had gone too far this time.

“Chow, you have to stop listening to Bud. He’s not just pulling your leg this time, he’s tugging at your arms and even your heart a bit. Tell you what. Tonight I’m going up to the Outpost to see the progress on the *Sutter*. I’d be pleased to have you come along, and we won’t invite Bud!”

Chow beamed at that suggestion. “Okay! Lissen, Tom. I’m serious about my heft. I’ve even been doin’ some more exercise and I’ve started countin’ those calorie things a little. Completely cut out butter ‘n bacon, which is practic’ly a sin in Texas, nine weeks ago and I’ve shed more’n fifteen pounds. I’m gonna keep it up and by this time next year you’ll see a whole brand new and svelte Chow Winkler! Pretty soon ya won’t have my big ole dairy-air slowin’ me down none!”

Tom looked at his chef. “Say that last part again, Chow. Please.”

“Uhhh, the part about my getting all slim fer ya, or ‘bout my gettin’ shed o’ my caboose?”

Tom laughed. “Oh, Chow. You can’t imagine the help that little statement has been. I’ve been sweating about how to get larger than expected loads down out of orbit safely and you’ve just given me a great idea. Instead of trying to reduce the ‘caboose’ on the ore shuttle, I’m going to make it larger. Have it open up like air brakes. That way, it will produce more drag and the existing parachutes will be able to handle the load.”

Looking puzzled but glad to know he was of some assistance, Chow shook Tom’s hand. “Happy to oblige, pardner! Whatever it was you just said.”

Tom and Chow left Enterprises that afternoon for Fearing Island. Three hours later the *Challenger* was pulling into its parking position near the giant space wheel. On the other side was the gigantic, golden hull of the *Sutter*. At twice the diameter of the Outpost at its stern, it seemed to dwarf the station.

While Tom inspected the giant ship and watched the installation

of the mining module, Chow—a veteran spaceman—took his special camera and floated up above everything by a few hundred yards and took a series of photographs. Shortly before he knew he needed to return the eagle-eyed man caught sight of something slowly heading out his direction from the ship. It was lazily tumbling as it approached. In a minute he could see that it was one of the special tools the construction crew must be using. It was something he recognized from way back when the Outpost was being built.

Stowing his camera in the pocket on his left leg, Chow decided to retrieve the wayward tool. It would pass him by less than thirty feet. He judged the timing and let off two small spurts of the compressed nitrogen used in the maneuvering backpacks. One more release and he was moving forward toward where the tool would pass. Unfortunately he misjudged the speed necessary for the intercept. It was evident almost immediately that he would reach the meeting point too soon and would then pass right on by.

Chow was so busy trying to figure out when to brake that he took his eyes off the tool. By the time he looked back up it was too late.

The tool smacked into his left arm, forcing the heavy fabric strap that held the backpack to the rest of his spacesuit to slip off his shoulder. As the tool bounced off in another direction, the old cook began spinning slowly with his maneuvering pack slipping down one side of his body and throwing off his center of balance. His immediate concern was to check for any tears. Fortunately, his suit was intact.

If there was anything Chow knew he didn't need to be right now, it was a bother to Tom or any of the Outpost crew. So, he attempted to get his slow spin under control. Unfortunately for him, the slipped backpack meant that all of his jets were out of position, so when he let off what he believed would be the proper anti-rotation burst it only served to make him spin at a slightly greater off-center angle.

To make matters worse, his recent diet meant that he was taking in fewer of the proper foods his body needed for full strength. He had experienced one dizzy spell at Enterprises already. Now, his head was spinning in what felt like the opposite direction of his body.

Tom popped out of the rear opening in the *Sutter* and jetted across the void to the end of the nearest spoke. He was about to enter the airlock when his radio picked up Chow's voice.

"Ya gotta come get me, somebody," he panted. "I'm all topsy-turvy an' gettin' ta feel a might sick ta my stomach. Help!" The last was more like a question than a request.

Tom scanned the surrounding area but could not see any trace of his friend. "Tom to Outpost. Give a good sweep of the area. Chow's in trouble and I can't see him!"

"Roger, skipper. We show a blip almost half a kilometer directly outbound from the station. Can you get visual?"

Tom looked out, away from the Earth. It was the one direction he had not considered.

"Got him!" he cried. "I'm on my way, Chow. Hold on. Outpost, get two or three more out here with backpacks to assist if necessary."

He tapped on the control panel on his right wrist and was soon jetting upward toward the stranded Chow. As he neared he could see Chow's face behind his visor each time the Texan rotated around. It was white and Chow's eyes were clenched shut.

"I'm almost there, Chow. Hang on."

Chow's weak reply came. "Sorry, Tom. I hate ta make a nuisance o' myself, but I'm mighty glad to hear your voice."

It only took a few well-timed and aimed bursts to get Chow's rotation under control once Tom managed to grab hold of his suit. Within a minute the pair were moving back toward the station where they were met by five of the crew in their suits. Tom had to smile. Even though he had requested only a couple men, the fact was that everyone loved Chow and it had been a struggle to keep the entire crew from flooding out of the airlocks and going to his rescue.

Inside the station and with his helmet pulled off, Chow's face was getting back some color and the sweat that had been bathing his face was wiped away. He slowly opened one eye and looked around.

"I take it I'm alright then," he said. "If'n I had my hat on, I'd take it off to you all. Thanks fellas. And you 'specially, Tom."

Tom was about to tell him that it was okay, but Chow stopped him with a hand on Tom's forearm. "Now, afore ya go sayin' anythin', I just want ta tell ya that you are prob'ly right 'bout not takin' me along on this Pluto mission. Fact is I've been overdoing the diet and stuff and think I need ta have Doc Simpson tell me how ta do it right. Just promise me that you'll let me make some special tubes of better tastin' gunk for ya ta eat up there. Okay?"

Tom laughed. "You bet!" He would tell the cook about *Sutter's* gravity and how frozen meals would be just fine later.

An hour later they headed back to the *Challenger* and dropped out of orbit. As they were leaving Fearing Island bound for

Shopton, Tom reassured Chow that what had happened “up there” would have no bearing on any future excursions.

“Next time up, when we can go at a little friendlier pace, I want to take you and Bashalli, and Bud will insist that Sandy come as well.”

Chow blanched. “Ya ain’t gonna tell ole Buddy Boy ‘bout my little trouble up there, are ya?”

“That,” Tom stated with a straight face, “is none of Bud’s business!”



## CHAPTER 16 /

### BACK TO HELIUM CITY

“WHAT THE HECK is that?” Tom and Bud exclaimed in perfect unison as they entered the basement laboratory that Mr. Swift had constructed in the Administration building several months earlier. Until today, Tom believed it had been unused—Mr. Swift never mentioned it—and was off limits to anyone except for Damon Swift himself. But, the older scientist had called them both to come over.

Turning his head part way around, he gave the two young men a smug grin. “What does it look like?” he asked them innocently.

“An amazing hologram,” Tom said at the same time Bud answered, “It’s a metal fish!”

Bud and Tom looked at each other and burst out laughing.

Damon joined them for few seconds, but then turned serious. “No. I really am interested in what you think this is. Tom says it is a hologram and Bud thinks it’s a fish. Well...” he made a little sucking sound through his teeth, “it’s both.”

“Mr. Swift?” Bud raised a hand. “Now that I see beyond the small picture may I change my answer?”

Chuckling, Damon replied, “Certainly, Bud. What do you think it is now?”

Bud took a deep breath before answering. He had been spending a lot of his non-flying time over at his small office researching many things on the Internet. He hoped that he could someday come up with smarter answers to many of Tom’s questions. So far, this didn’t look like that day.

“Well, now that I look at it, it might be a hologramatic computer display on which you have placed a moving image of a three-dimensional mechanical fish.” He looked at Mr. Swift who now had his mouth slightly agape.

“Ah, don’t look at me like that. I was going to say it was a floating aquarium, but that would have sounded even more stupid.”

Mr. Swift began laughing. “No, Bud. Actually I was staring at you because you got it in one guess. Well done!”

Now, Tom looked slightly puzzled. “Is that really it, Dad? I mean, if it is then my guess would be that this is a display based maybe on my 3-D Telejector technology, but with much finer control of the picture, and that you’ve got it displaying some sort of 3-D moving CAD video.” He looked for a yes or no answer in his

father's eyes.

"Don't let this get out, but I am extremely proud of the two of you. Yes, Bud, it is exactly what you said and it is also doing what Tom says. As to the Telejector issue, I have to admit *mea culpa* in borrowing some of that concept, but I am using a new form of MSLLD that I've been working on for a proposed near surface flyby of Jupiter."

Bud frowned. "Lost me again. MSLLD? Misled?"

"Not quite. It's a Multi-Spectrum Laser Light Emitting Diode. Now, Tom can tell you those are nothing new. They once were termed solid-state laser diodes. The big difference in mine is that there are twenty-eight on a single chip with each one aiming into a tiny mirror. Each mirror can change position eight thousand times a second and then pass the reflected beam through an electronic focusing lens. It's not an actual lens but it does the same thing. What it boils down to is that one chip can control about three thousand seven hundred pixels, changing them sixty time a second."

As Tom and Bud considered this, Damon pointed to what looked like a yardstick sitting on the table directly under the moving image. "That bar has thirty of the chips embedded in it, with everything being driven by a trio of powerful microcomputers. In all it is equal to a high definition television running at about seven-hundred-twenty progressive scan rate."

"Except, isn't this actually a lot faster, Dad. I'm thinking about the time it takes those seven hundred and twenty lines to be refreshed while this appears to do it instantaneously."

"Well, it is a little faster, I'll admit, but newer TVs are really fast about putting all that info on the screen. The advantage is that an area I want more detail on can be indicated like this—" and with his finger he 'drew' a circle around one part of the fish that instantly came into amazingly sharp focus and detail, "—and the computers simply take cycles from adjoining chips to enhance the requested area. At that point it like changing from around eighty pixels per inch to eight hundred."

"That's really neat, Dad. Too bad it isn't anything I can use on this Pluto mission, though," Tom stated rather sadly. Brightening slightly, he asked, "So, how does having a really powerful display help with your proposed Jupiter probe?"

Mr. Swift smiled. "Ah, but you see, this is only half of the solution and it is a bit of a sideways application of the technology at that!"

He explained that the final product would be a dual system



where one half would project laser beams from an assemblage of much larger MSLEDs and through the 'lens' system that would focus them in a rectangular area about half a mile wide and a little under 1,200 feet deep from one mile altitude. As these beams reflected off whatever might be found on the liquid/gaseous surface of the planet they would be intercepted by a sensor array that would bundle the information as a series of frames that would then be beamed back to Earth.

"There will be no interpretation time spent on what we receive. It will simply be replayed right on another of these set-ups so—taking into consideration the anticipated forty-eight minute delay—scientists will get a real-time video of the flyby. Plus, they have the close-up controls of this little test system. The operator will be able to focus down to a sampling area of a few centimeters and send the image data to a special spectrometer to identify what is there."

"But, you said a sideways application. Why?"

Mr. Swift chuckled again. "Well, because the system was never meant to be a simple computer display of a fish. It was designed to gather the information to be sent back without the need to be number crunched by massive computers and then, hours or days or weeks later, displayed on traditional LED or plasma screens. And, sideways because I am using it, as Bud said, as part of a CAD program for an underwater craft I am working on for the Australian Navy."

He pointed at the floating image. "That fish is a two-man submarine they want to use for patrolling their territorial waters. It looks and swims like a very large sunray fish, will be coated with a new sensory material that will both act like a giant array of inputs as well as making it appear on any SONAR as an organic life form."

He told them more about the configuration and how the project came to be.

Before the two left Tom asked, "You called and asked me to come over. But, you never said why."

"Oh! My bad, Son. I called you to show you the system and to tell you that it isn't going to be classified, and I thought you might be able to use it as part of the instrument package on the *Sutter*. It might help you find out what the heck is down there before you touch down."

Tom smiled and nodded. "Is it something the Electronics department can put together for me in the next week? That's when I intend of taking off."

"They're already working on one for you. Oh, and I've seen your crew list. I'd like to make one suggestion. Actually, George Dilling

and I want to make it. For your radioman, instead of taking Tim Moss—his wife is about to have their first child, you know—why don't you ask young Mike Jayson? He's both a skilled radioman as well as being former military. He can take orders."

"I'll keep that in mind, Dad. Oh, and thanks!"

An hour later Tom was starrng openly at his father. "Isn't there more information? It doesn't make sense."

Damon Swift shook his head, but he smiled at Tom. "All I can say is this. Peter Crumwald sent me a cryptic message stating—" and he picked up a piece of paper from his desk again, and read, "'D and T. Big things afoot. Mystery sub snared. Come ASAP to see what we caught!' And, that's the extent of the message. I tried to send him a confirming message, but it hasn't been answered. Frankly, I'm stumped over this. Maybe a little worried."

"Bud and I will head down there right away," Tom told him, beginning to turn toward the office door.

"Wait! I'd like to come with you, if you can find a place for an old inventor." Mr. Swift was looking pensive, something Tom had rarely seen. It was almost as if he were afraid Tom might refuse.

"That will be great, Dad. If you don't have any meetings coming up in the next day or so then grab your laptop and come on."

Two minutes later the father and son duo headed out the door stopping for a minute so that Damon could explain a couple things to Munford Trent.

"That should work, Mr. Swift," the secretary stated. "The only item on your calendar for the next two days is a meeting with Mr. Aturian over at the Construction Company. I'll call and explain that you need to reschedule."

Tom and Damon rode the walk-ride belt down the middle of the wide corridor toward the elevators. On the way, Tom TeleVoc'd Bud with news of the immediate departure.

"Be at The Barn in five," Bud promised.

A quarter of an hour later the three men were flying over the town of Hudson Falls on their way toward the coast. They spent the entire trip discussing what Peter Crumwald's message might mean.

"This is the first time I've heard anything about a mystery sub. Did you know about it?" Bud asked looking first at Tom and then at Mr. Swift.

As Tom shook his head, Mr. Swift nodded. Confused now, Bud's head swiveled back and forth from Tom in the pilot's seat to Mr.

Swift sitting directly behind him. “Uhhh?”

Chuckling, Mr. Swift admitted, “There have been sporadic reports of something roaming around the greater area of Helium City and the sunken pyramid ruins down there. It’s been going on for longer than a full year. What we once thought, well, at least what some people thought, was some giant shoal of fish, or a pod of whales or some other organic gathering, has exhibited some incredible properties. Sometimes it is noisy and often nearly silent. Every now and again—and this is why I subscribe to the idea that it is not a natural phenomenon—sonar gets a solid blip.”

“Like a sub, huh?”

“Possibly. But as quickly as it appears it goes away. A year ago Peter dubbed it the Mystery Sub. If it is a sub, then I am going to be very happy to see the end of it!”

They landed at Fearing Island a couple hours later and quickly transferred to a seacopter. Tom sent it skimming just a few yards over the surprisingly calm ocean surface racing to the point where they would dive to the undersea operation. When he finally set it down on the surface they were surprised as the radio crackled into life.

“Swift craft. Please lift back off. We are surfacing. I repeat. Swift craft please lift back off. We are surfacing directly below your position!” A black smoke flare popped up and began spewing a flume of black.

Tom’s right hand stabbed out to the control panel and shoved the throttle forward. Immediately, the seacopter leapt into the air and scooted to the right. And, just ten seconds later the black-gray conning tower of a U.S. Navy submarine broke the surface.

“Good thing this is as responsive as it is,” Bud said, “or we might have become a hat for that sub!”

The radio came back on. “Swift craft. Sorry about the mix up. We did not know your intentions. Please stand by...”

Tom looked first at Bud and then turned around to look at his father. Both of them shrugged at his questioning gaze. He tapped the “mic” button on his headset. “Tom Swift here. Not a problem, but who are you, please?”

“Tom Swift. Unable to identify ourselves due to security. Can you come aboard?”

Mr. Swift placed a hand on Tom’s right shoulder. “From the number on her coning tower, I’m fairly certain I know that sub, Son. I’ve met her skipper. Go ahead. Oh, and see if they want just you or all of us.”

“Tom to sub. We are three souls. Do you wish us to all transfer?”

There was a pause before the answer came. “Is it possible for one or two? Again. Security.”

Bud whispered, “I’ll man the fort.”

“Roger. It will be myself and my father.”

Two minutes later five men appeared on the deck of the sub, quickly inflated and lowered a gray raft and two of them climbed in and rowed to the waiting seacopter that Tom had maneuvered to within a hundred feet of the Navy vessel.

“Welcome aboard, Damon,” came a booming voice of a man who was obviously the Captain.

“Bill! Great to see you again,” Damon exclaimed as the two men warmly shook hands. “Captain William Haver, my son, Tom.” As Tom shook the man’s hand, Damon continued. “Bill and I go back to my days at NASA. He was one of our Naval aviator consultants.”

Haver laughed. “Yep. But, I had an ejection seat injury—blew an eardrum so I couldn’t fly any more—and transferred to the tube service.”

Seeing Tom’s questioning look he added, “Sometimes subs are called tubes. At least,” he lowered his voice, “by people who love them.”

After explaining that his sub was there to keep unauthorized people out, the Captain suggested that they return to the seacopter and head down to the city. “You’re gonna love what they snagged!”

“Snagged?” Damon asked.

“Well, actually *we* sort of caught them red-handed and settled down right on top of them until they agreed to play nice!”

The trip down took about ten minutes and as they neared the underwater dome they could all see an incredible-looking submarine. Where normal subs were, as the Captain topside had said, tube-shaped—best for withstanding enormous pressures—this one was build with hundreds of angles. It almost looked like a stealth aircraft. About one hundred feet long it ranged from approximately five feet wide in the nose out to perhaps fifty feet at its widest point.

It was unlike anything Tom, Damon or Bud had ever seen.

Peter greeted them as then exited the airlock. “Damon. Tom. Bud. Great to be here to be able to greet you.” He grinned at them. “Like our little catch?”

As Tom and Bud nodded, Damon asked, “Was it manned?”

Peter's face now broke into a wide smile. "Oh, yes. And just wait until you see who was in the belly of the whale!"

He led them toward the building they all knew to be the combination Maintenance and Security structure. He opened the door and ushered them inside. "We had to empty out a couple of the storage spaces," he told them as they stepped around piles of boxes, "so that we could accommodate our guests."

They came to a desk with an alert-looking guard. He nodded to Peter. "All's been pretty quiet, sir. Same sort of threats from the big guy, but most of them just sit there all sullen and defiant."

"Thanks. Can you call for two more men, please? We need to open door number one."

The guard picked up a handset and made a call. Within moments a pair of burly, and armed—with sawed-off stun bag guns—men trotted down the hall. "We're ready. Mr. C," the smaller of them said.

They walked down the rest of the hall, stopping at the last door on the left. Peter knocked on it and called out, "Stand back. We're coming in."

One of the guards unlocked the door while the other one stood ready with his gun. He pushed the door open and stood back revealing the man inside.

*Atlas Samson!*

"Look what the cat dragged in," Peter told them as Samson rose from the small cot he had been sitting on.

"You're a dead man, Crumwald!" he snarled taking a step forward. Both guards raised their guns and pointed them at his chest. Samson quickly stepped back, and seemed to deflate. "What do you want?"

"Well, I thought that before the Navy takes you away, locks you up, and tosses the key down a rat hole, you might want to talk a little. Perhaps tell Mr. Swift here what sort of game you have been playing."

Samson turned away and refused to say anything.

"Have it your way, then. I hear that eco-terrorists are getting the same treatment as other terrorists. Lots of luck in your forthcoming time at McGuffin Base in Antarctica!"

He motioned to the door and they all stepped out. The lead guard relocked the door and they all headed down the hall. As they walked past the guard table, Samson could be heard yelling out, "I'll kill all of you! You'll regret ever crossing Atlas Samson!"

Back in Peter's office they sat sipping coffee and talking.

"All total, we got him plus his crew of fifteen. Most appear to be Basque or Portuguese, but his second in command is a wanted Belgian by the name of Oosterhoot. Interpol has first claim on him. As you heard, the Navy will be taking Mr. Samson off our hands. He is being formally charged in two days with piracy and breach of a security perimeter—more than a hundred counts—and faces a life behind bars. Turns out that he has been siphoning off helium at an alarming rate and selling it black market. We located a second well about one-point-one miles from here, over a ridge. That sub of his is not only stealthy, it is about sixty percent high pressure tanks."

"But, how could he get so much of the helium?" Bud asked.

"From what we gather, the sub was making daily deliveries to a series of his tankers about one hundred miles away. Most of them on legitimate cargo runs, but outfitted to receive whatever the sub could carry. Midnight rendezvous and daytime siphoning for more than a year. We figure that he was taking out about the same amount as we have been legally harvesting."

"It's no wonder that the well is running on empty," Tom said angrily. "I don't suppose there's any way to reclaim what he's taken."

Peter shook his head. "No. Not much of it. The Navy has stopped two of his tankers and boarded them, plus we found out from one of his crew who is looking to cut a deal, which countries have been buying the stolen helium."

"If I recall," Mr. Swift stated, "the U.N. agreement to supply prohibits any black market dealings, and any country found guilty loses all rights to any share of the remaining supply."

Later that day the three departed, heading back for Shopton. As the Toad was taxiing back to its place in The Barn, George Dilling TeleVoc'd Tom.

"Tom? Is your father with you?"

"Yes. We've just landed. Why?"

"You two will want to come right over here. We just received a fairly lengthy message from your space friends. I think you need to see this right away!"

EXPEDITION

**Space Friends to Swifts. We bring multiple news to your attention.**

**One. Planetary object formerly in position nine in this system has been moved by our Masters. We were not aware of this before now.**

“I knew there had to be some outside influence!” Tom declared. “There’s just no way it could have been anything else. Now we have proof.”

Placing a hand on his son’s shoulder, Mr. Swift advised, “We need to take this all cautiously, Son. Before anything else, let’s see what else our friends have to say.” He pointed at the screen and Tom began reading out loud again.

**Two. Planetary object has been altered. We have zero information regarding nature of alteration.**

**Three. Advise caution if you plan to examine planetary object. We do not have information of our Masters intent. We believe there to be zero negative intention but have no proof.**

**We will prepare to assist you if you believe there is a requirement. We are able to travel from current location to planetary object in one Earth hour period.**

“Wow,” was all Tom could say when he finished.

“It does answer a lot of questions, but it brings up others. We still don’t know what it is that is making Pluto larger around the middle. Have you checked with any planetary physicists to see if

this could be a function of the increased gravitation pull from the Sun? After all, it's little Pluto's first dance this close to the light."

"I called professor Bellamy at MIT. You remember that I lectured one of his classes last year. Anyway, he has been working with the numbers for more than a week and tells me that the only way the weight gain is possible—and he says that it is definitely heavier than previous measurements would indicate—is that it is from the addition of... well, something. He isn't certain what it could be."

After giving it a moments thought, Damon Swift spoke up about what had been hanging on his mind for a few days. "Are you certain you want to go up there, Son? It will be pretty costly, but we could build another probe. We could even design it to land just like the Hayabusa and NEAR spacecraft a number of years ago. Those touched down on different asteroids and transmitted back a lot of good info." He looked apprehensively at Tom.

Tom shook his head. "No. I honestly don't think that's our best bet. Even at top speed we would be facing several more months of delay. Who knows what's going to happen in that time. The *Sutter* will be ready to go in under a week. I think the best thing we can do is to go there, use your new MSLED probe system we're installing on *Sutter* to see what we can find out without landing and then, and only then, touch down."

Tom and Bud walked up quietly behind a red-haired young man who was sitting alone in the cafeteria. Sitting down on both sides of him, they each reached out a hand and placed it on one of his shoulders.

"Michael!" Bud greeted him. It was with the enthusiasm of seeing an old friend even though the two had never met.

"Hello, Michael," Tom said to him. Jayson's head ping-ponged back and forth looking at them both. He finally stopped and looked at Tom. "Uh... hello, Tom. And—"

"Hey. I'm Bud Barclay, pilot extraordinaire and best buddy of genius boy there. Now, turn your head, slowly so you don't unscrew it, and look deep into his eyes. He has a proposition for you." Bud gave Michael a big smile and then pointed over the young man's shoulder at Tom. Michael turned around.

Turning serious, Tom said, "Michael. You've been involved in this Pluto business from the start. I don't have to fill you in on what's going on, at least not with anything to do with signals that have been coming in. The thing is, we—myself, Bud, a couple other pilots and a few specialists—are going to be taking off in a brand



new ship five days from now and we're flying out to see what's actually going on with our movable planet."

Sensing a little confusion, he asked, "Following me so far?"

"Um. I think so. It's the big golden spaceship I seen a couple images of, right?" Tom smiled and nodded.

"Good. So, you also know Tim Moss." A confirming nod came from the redhead. "Fine. Do you know him enough to know that he is about to become a father?" Another nod. "Excellent. So, If you were me, and let me assure you that I am a very nice man, would you ask a father-to-be to go on a space expedition and miss his child's birth, or would you go ask a young, bright, ex-military man who—as I understand it, once applied for NASA's astronaut program—with the same capabilities and no forthcoming child?"

Tom could almost see the wheels turning in Jayson's head. He mentally counted: "... *three... two... one...*" and saw Jayson's face split into a huge smile when everything fell into place.

"Me?" he practically shouted. "You want *me* to go up with you? Oh, man! Of course I'll go! Oh, gee! Wow! What do I have to do?"

Before more exclamations or questions poured out, Tom explained the purpose of the trip and outlined his duties. "Fairly mundane radio work for the most part, but I need a man with experience dealing with digital equipment and monitoring multiple pieces of equipment simultaneously, is adept at repairs, which I hear you are very good at, and has the energy to work the fairly long hours that will be required. We won't be bringing a second radioman, so you're going to be it."

"And, the skipper, there, isn't even going to chain you down and keep you locked in the radio room all the time. I understand that he lets young minions out at least twice a day for potty breaks. I'm special; I get three!"

Jayson gulped but then noticed Bud's lower lip twitching, just before the flier broke out laughing.

Tom told him, "I'm having George Dilling pull you from the work rotation, and Bud here is going to give you the abbreviated astronaut training program starting in about one hour. Unless you totally wash out, you will get your wish to go into space, and one heck of a lot further than NASA would ever get you!"

The next morning Bud called Tom to say, "Michael is taking to this like nobody's business, skipper. After Doc gave him the old poke and prod I stuck him in the zero-G chamber. He acclimated to it in about, oh... one second. It's like he was born to be up there. After this trip is over I think you ought to see if he'd like to try a stint up at the Outpost."

“Great news and a great idea, Bud. I wouldn’t mention it to him just yet, but once we come back I think it’s a marvelous idea. Keep me in the loop. Any question and I’ll be in Communications. Today’s the big day for the probe to go into the well at Helium city.”

“Hey, that’s right. Too bad we can’t be there to watch the *Helium Flier* in action. Let me know what you see.”

Tom headed out of the office and was soon entering the Communications building and George’s office.

“Do we have the link set up yet?” he inquired.

“Should be opened in less than five minutes. We’ve had a few voice-only conversations with Hank. He reports that the probe tested A-OK and that they are ready to remove the top valve assembly. I asked him to wait till you were here and the full video feed was running.”

Tom was happy about that decision and thanked the Comms manager.

Together, they walked down the hall to one of the video conferencing rooms. The two-way camera and high definition monitor system would give Tom the best view outside of actually being there. He no sooner sat down than the receiving light blinked red about ten times and the screen changed from the static, “**A Swift Enterprises’ Video Conference Is About To Begin... Please Stand By**” screen to a view of the outside of the building surrounding the primary wellhead.

Hank’s head popped into view from the right and he waved.

“Hey, skipper. Oh! Hey, George. Nice to have you both there. We’re just about ready down here. Say the word and we’ll open her up.”

“Go for it!” Tom ordered with a smile.

The hand-held camera being used by a technician showed Hank and three men stepping into the building; it followed them inside. Over the next three minutes the men used a powerful air wrench to remove the twelve bolts holding the upper valve assembly to the down pipe. An emergency shut-off valve farther down had already been activated to keep what little helium there might be inside the well.

With Hank giving a play-by-play description of what they were doing, Tom watched intently as the folded probe was angled inside the building and upright—it cleared obstacles by inches—and saw it being slipped down into the shaft. The details were so crisp that he could even see the thin metal tether attached to the probe at one end and to an all-new head mechanism at the other.

Five minutes after it started, the twelve bolts were secure again. The probe was now ready to be lowered. Hank turned to the camera before stating, "We're opening up the lower valve, skipper. I'll turn on the probe's nose light and camera as soon as we drop the whole thing down into the cavern. That will take the winch about three minutes. Stand by..."

A little more than three minutes later he announced, "Get ready. Here goes..." and Tom's monitor brightened. But, there was nothing to see. It was hazy and whitish, but there was no detail.

Hank must be seeing the same thing as he came back on with, "We may have an unforeseen problem, Tom. All I'm getting is a pool of white."

"Don't worry about that, Hank. The cavern is so large that the light can't possibly penetrate and show anything. Wait until we get it flying around in circles. When it gets to within about one hundred feet of something solid, we'll start seeing things. Besides, we are interested in the RADAR imaging right now."

The probe began unfolding and inflating. This was caught by the wide-angle camera lens when the propeller began unfurling and puffing up around it. With both the camera system as well as the RADAR mapping system running, Hank set it into action. "If this place is as large as you've thought, skipper, it may take an hour or two before we get this reeled out far enough to see anything. Want to stick around, or should I call you?"

Tom opted to have a call put through once the RADAR detected solid walls within about one hundred feet. "I can get back here before the fun starts," he said before heading back to the large office.

The call came a little over one hour later, and Tom hastened back to the video room. He sat down and announced his arrival.

"Oh. Good. Listen, Tom, we swung around almost directly south of the shaft and got the good RADAR bounce. Not a lot anywhere else inside of that. The next nearest wall is at around thirty degrees magnetic and that is just at one hundred forty feet currently."

"Keep it going, Hank, until you think we've got a full map. By the way, how deep and how wide is that cavern?"

There was a pause as Hank studied a printout. "From top to bottom it's about five hundred feet tall and the average width is about one thousand nine hundred feet. I had one of our folks do the math and you are right to be bothered by the lack of gas down there. We've only taken out about sixty percent of the potential volume to this point. That's less than we ever hoped would be there, but a whole bunch of it is missing."

Ten minutes later Tom began seeing a lot of the surface of the rocky walls. To his surprise—and Hank verified it from the RADAR mapping—the walls were unaccountably smooth and even. His heart raced when he realized the cavern must have been constructed and was not a natural occurrence.

“Go ahead and cut it loose, Hank,” Tom suggested. “Let’s see what’s down at the bottom.”

There was a shaking of the camera as the RADAR equipment dropped away followed by a jolt as the tether detached and the little probe began nosing down. With Hank applying more power to the propeller the probe began flying almost level. It was still descending at about twenty feet a minute, but it was under control.

As the time neared when the battery would be nearly empty, Hank swooped down to within twenty feet of the bottom of the cavern.

A shiver ran down Tom’s spine.

There, in the soft light of the infrared picture was the unmistakable sight of a bulge. And, it was far too smooth and rounded to be a natural phenomena.

“Hank! Do you see that? It’s a membrane. Someone put a membrane down there. Something under pressure is making it bulge out like that. I’ll bet there’s a whole other cavern below. It may even have a completely different store of helium!”

The day quickly came when Tom, Bud, and seven other Enterprises men prepared to head for Fearing Island and a trip to the Outpost in the *Challenger*. Haz Samson had begged for, and been allowed to join them. His chief reason was that he believed that the world’s governments would insist that an outside company act as the sales agent for any minerals found, and he had both the business infrastructure as well as a deep desire to ensure that his own father could not get his hands on whatever Tom discovered.

Although Chow Winkler also wanted to come along, and had been the first to volunteer, Tom had picked a very young crew.

“Sorry, old timer,” he told the disappointed ranch cook. “At the speeds we’ll be traveling and the rough and steady G pressures we’ll experience, there won’t be any relief time for cooking or eating normal foods. We’ll take along those meal packs you made, but I’m a little afraid that the pressures we’ll be subjected to might be a danger to you, and I couldn’t forgive myself if I hurt the man who introduced me to Roadrunner in a Bag!”

The older man nodded with a little grin on his face. He well

remembered the meal he, Tom, Bud and Hank Sterling shared one night on a trip out to the Citadel in New Mexico.

“Okay, Son. I git it. And, I thank you, kindly. If’n there’s no reason fer me ta come along, I mean, if all ya’ll be doin’ is sucking muck out o’ plastic bags—Yuck!—then I’d rather stay behind. Just be sure to let me know when yer gettin’ back so’s I can fix you all a good Texas sized steak meal!”

Tom again promised Chow that he could come along on a later, more leisurely trip in the *Sutter*.

The eleventh member of the team was to be an experienced CIA agent, William Davis. He would join them on Fearing, taking a small Government jet to the island from his Washington, D.C. office.

As Tom and his men climbed aboard the *Sky Queen* for the fast trip to the rocket base, Harlan Ames and a team of three of his men drove up.

“Got to go along, Tom,” he stated as he climbed aboard. “The internet has been buzzing with all sorts of nonsense these past few days ranging from ‘the Swifts are planning to build up an arsenal of secret atomic weapons on that planet’ nonsense all the way to you plotting to drop the whole thing down on a couple unfriendly nations and killing all their citizens.”

Tom laughed out loud. “Doesn’t anybody realize how silly those sort of wild claims sound?” he asked.

Harlan sadly shook his head and ran one hand through his hair. “Certainly not the idiots who make such claims. But, along with vetting your CIA passenger I’ve got to check out the entire island and the *Challenger* and that sort of thing. Hopefully it will only mean a delay for you of an hour or so.”

They flew out minutes later and touched down on the reinforced pad designed for the scorching heat from the *Sky Queen’s* original engines. Now that they had been swapped out for repelatrions, the pad really wasn’t required, but made a nice place for the giant jet to park.

No sooner than they had touched down that the radio crackled to life.

“*Queen*. We’ve got some sort of attack happening over near the submarine pens. Do you intend to take off or remain on the ground?”

Harlan, who had flown over in one of the rear seats in the cockpit told Tom, “Tell them I’m here with a couple of my men and we’re coming out. I suggest that you and the crew get in the

*Challenger.*”

Tom asked, “Can I get into the air to protect the ship?”

Harlan, now running away shouted back, “Yes. Get in and get out of here.”

They quickly departed the giant jet and split up. Ames’ men jumped into one jeep and drove quickly toward a rising column of dark smoke.

As Tom and the others got into two other vehicles Bud stated, “It looks bad over there. I hope Harlan and his team can take care of that.” Sirens from the island’s own security detail could be heard racing in that direction.

Through gritted teeth, Tom replied, “Me, too!”

Five minutes later the team was climbing the lower ladder to the first deck of the giant ship. As they did Tom noticed a small jet being escorted to the runway by several of the small protective drones that constantly circled above the facility. After it touched down the pilot must have received permission to taxi directly to the location of the *Challenger*. Within a minute the small jet had stopped a hundred feet away and a single occupant was jumping out and running for the ship.

He struggled a little with his one suitcase but with some assistance from Bud, both he and the bag were standing next to Tom in the hangar a minute later.

He held out his hand. “Bill Davis, Mr. Swift. CIA Field Special Agent and former Navy pilot. What the heck is going on over there?” He pointed across the island where the sounds of a few guns, numerous eGuns and several alarms were punctuating the smoke.

“That is something we need to get away from, sir. Grab your bag and follow that red-headed man. He’ll get you strapped into one of the crew seats and stow your bag.” Next he called out to his radioman. “Hey, Michael! Lend a hand!” He explained what he wanted and the redhead nodded.

“This way, sir!”

Three minutes later, and under emergency conditions, Tom raised the *Challenger* off the concrete and they soared skyward.

It wasn’t until they had rendezvoused with the Outpost that Tom received a radio message from Harlan.

“Got things well in hand, Tom. Turned out to be three men on very high-speed jet skis. Each one had an RPG launcher strapped to the front. They only hit one dock with nothing moored there plus the old shed just inland from the jetmarines. Lots of smoke and

some fire, and they were silly enough to try to shoot at our men a little, but wet people don't do very well against the zap of the eGuns."

"How could they get so close, Harlan?"

Ames sighed. "Do you remember that stealth sub of Atlas Samson? Well, these jet skis are built along the same lines. They looked like slightly larger waves to the RADAR system. Plus, they are electric so there was no engine noise. The first indication something was up was when they launched their rocket grenades."

He promised to have more information the next day once the three were taken back to the mainland and turned over to the FBI.

After transferring their cargo of food, water and other supplies to the *Sutter*, now just a hundred feet away from *Challenger* and seemingly dwarfing that ship, Tom ordered a five-hour rest period before departure.

On schedule, the crew climbed into their various G-absorbing couches—now in a slightly reclined orientation to the repelatron-powered line of flight—activated the gel-filled surrounds and settled in. Tom and Bud were in their places in the control cabin performing the final startup and systems checks before they, too, activated their couches.

The *Sutter* used its two small maneuvering repelatrons to ease away from both the Outpost as well as *Challenger*. When it reached a half-mile away those same repelatrons aimed back at the Earth and began pushing them out and toward the Moon.

It had been decided to run them for an hour, perhaps getting them a third of the way to the Moon. After that the plasma drives would kick in. And that would be when the effectiveness of these new couches would be tested.

As the body temperature gel stiffened in the three-dozen pockets and tubes under and around them, Tom could feel it providing such an even level of support that he felt as if he were floating. There was absolutely no sensation of any pressure. He leaned forward to look at the readout for the artificial gravity field. It was running. When the ship changed to plasma drive, it would be turned off.

*Well, well, well*, he thought. *Doc Simpson really knows what he's doing demanding these couches. Hope they work this well under plasma acceleration.*

On schedule, Tom made the ship-wide announcement. "Set your couches for constant plus-G. That's the green button on the swing out control pad. If in doubt, now is not the time to find out that you are colorblind. It's the third button down. Plasma acceleration starts in thirty seconds."

The engines kicked in and everyone was pushed back into their couches. As the acceleration built, the couches automatically swung up placing the men in almost a standing position. This meant all G forces were hitting them evenly.

“Not too bad,” Bud remarked as they hit one point one Gs.

“You’re right,” Tom replied. “But, don’t get too comfortable. Once we get used to this I’ll increase it up to one point five Gs. Doc agrees that if we stick to his run and rest schedule we can handle the extra strain.”

Although he could not come along, Doc Simpson had provided Tom with detailed instructions about how much acceleration the crew could safely take, for how long, and how long to coast.

For the first three hours they all gritted their teeth as they were pushed deep into the acceleration couches. Rather than shut things off and actually coast, Tom’s plan called for them to reduce power to just a 1-G rate for the one-hour rest period called for.

This was repeated five times before Doc had insisted that a zero-G acceleration rate be maintained for six hours during which the crew would sleep. This went on for almost five days before they flipped the plasma engines out on their extended arms and aimed them forward to act as brakes.

“Jetz! Will you look at that,” Bud said in an awed voice.

Tom saw it as well. The engines were sending out spikes of bright blue plasma around a central cone of reddish yellow. As these shot past the hull they caused an eerie glow inside the control room.



## CHAPTER 18 /

### IT'S COLD DOWN THERE!

A LITTLE MORE than two days later *Sutter* had just passed over the Asteroid belt and was now pointing at Pluto. In the background, and looking surprisingly blue, was the gas giant planet Jupiter.

“Why is it that color, skipper,” Bud asked. “All the pictures I’ve seen show stuff like giant red spots and swirling whites and grays and oranges, but no blue. Does that mean there’s water down there?”

Tom snorted. “Hardly. The plain truth is that all the photographs sent back by each and every probe is assembled and color-coded and corrected by computers on Earth. If you look carefully in the lower right of Jupiter you can see the red spot, and it is actually more of an orange color.”

“Okay. Why? Why not the colors the computers say we should be seeing?”

“Because nobody ever took into consideration that the color palettes the cameras are supposed to balance their pictures against might be effected by solar radiation. I’ve done some experiments and can say that everything I came up with indicates that just traversing our own Van Allen Radiation Belts on the way outbound is enough to make the proper colors shift a little. I can only image what things are like years later for these probes. You remember when we all thought Mars was really red?”

Bud smiled. “I used to think that was because it was made of iron and had rusted.”

“Right... Well, every time we put a new probe or wandering machine down there our perception of what the colors should be were tainted by the very first images. I mean, telescopes had been seeing red for centuries. So, when those first grayscale images came through, we colored them to what we believed we’d find. Now we know that red we see from here is light refraction for the most part plus a bit of particulates in the Martian atmosphere.”

“So, Mars isn’t red and Jupiter is blue?”

“Mars is a gray-orange and Jupiter is many colors, one of which we can now report to be blue.” Tom opened the ship wide intercom. “Captain to crew. We are about to do another braking maneuver. Everyone to your couches. Be sure to face them to the rear of the ship if you’ve moved them. Plasma rockets to fire in thirty

seconds.”

“Hey, Tom,” Bud said as the deceleration pressure hit them, “I’ve been wondering about something.”

“Okay. Shoot.”

“Well, I’m no physicist, but I do know the difference between inertia—which is hitting us in the chest right now, sort of—and gravity. Inertia is a tendency and gravity is a law, and it deals with the mass of something and all that. So, if Pluto out there is a mass, it is producing gravity. Right?”

“Well-l-l-l-l, producing isn’t really accurate. Let’s say that it is emitting, which also isn’t accurate, but will do for now.”

“Okay. It’s emitting gravity. It is pulling a little at us.” He glanced over in time to see Tom nod. “Alright, So if it is pulling on us, even if we were standing still right now it might have enough oomph to eventually pull us into it. So, if it can do that to us, is it doing the same thing to the asteroids out there?”

There was a silence coming from Tom’s direction. Bud looked back to see Tom looking right at him with a blank face. “Did I say something stupid?”

Tom shook his head and took a deep breath. Letting it out he replied, “No, Bud. But you have just brought up a subject that could spell trouble sometime down the road. If Pluto does begin attracting asteroids, it will pull them in and they will hit the surface. With the counter pull from the Sun, probably not very fast and that means they’ll stick.”

He paused, so Bud asked, “So, Pluto will get bigger?”

“Yes.” Tom’s voice did not sound happy. “Bigger with more mass and more gravity and more asteroids will be pulled in and the whole cycle continues and eventually means that Pluto could become a real nuisance out here. Or, even a deadly neighbor!”

Now it was Bud’s turn to look blankly at his friend. He gulped. “Oh.”

They both sank back into the acceleration couches and tried to relax against the deceleration forces. A minute later Tom had a thought and activated his headset mic, addressing the entire ship.

“Captain to crew. We are going to do a little maneuver so that we are temporarily backwards. That will let us all sink into the couches for the next couple of hours. I have to make a few radio calls and this will help me. Thanks for putting up with the unscheduled spin.”

“What do you need to do?” Bud asked.

“I’ve got to talk to dad and maybe even get off a message to our space friends.” He made the necessary adjustments to their flight attitude and soon everyone felt all forces removed as they spun with the engines off. A minute later they were pushed back into their couches, but the tubes and gel absorbed the stresses so well it felt more like sinking into a feather bed.

Tom opened channel to the radio room. “Michael? Put me through to Enterprises. Unless I’ve made a mistake it should be about noon there.”

“Okay, Tom. Just a sec—right. You’ve got a channel.”

The radioman Michael had replaced, Tim Moss, answered the call. “Enterprises here, *Sutter*. What can I do for you?”

“This is Tom. First, did your baby come and second I need to speak with my father.”

“No. The doctors say probably two or three more days and Lisa wants me to stay away as much as possible. She’s a little touchy right now. Anyway, let me ring your dad.” Two minutes went by and Tim came back on. “He’s en route to his office and should be there in a minute. Is it okay to ask how things are going out there? And, how’s Mike?”

Tom told him that everything with the mission and with Michael Jayson was going very well. As he finished, a beep could be heard.

“Ah. That’s you father. I’m switching you over now.”

“Hello? Tom? What’s going on? You’re not scheduled for another call for at least five hours. Is everything alright?” he sounded very concerned.

Tom told him about the conversation he and Bud just had. He ended with, “Can you get a message to our space friends and ask them what they know. Or, at least what they might think could happen?”

Mr. Swift promised to get the message out within the following fifteen minutes. With the call ended, Tom was about to swing the ship back around when Bud asked, “Can we leave it like this for awhile? I haven’t been able to get my straps to fit comfortably since we swung around?”

Tom looked curiously at his friend and then his face made one of those “ah-ha!” changes.

“Bud. In my desire to keep looking where we are going I forgot the basic principles involved. Hang on—” He once again activated his headset mic. “Captain to crew. With apologies I have just realized, thanks to our own Bud Barclay, that I need to keep the ship facing backwards until we bleed off most of our speed. It

should be less of a stress on everyone.”

The journey continued with Tom reworking the engines on/engines off schedule to allow them to get to Pluto a few hours earlier while not adding any additional inertial stresses to the crew.

“Enterprises to *Sutter*. Do you read?” the radio sounded out. With Michael off duty, and most of the crew on their sleep cycle, Tom had routed all incoming signals to the small communications panel down in The Expanse where he and Bud were currently discussing the plan of action for any mining attempts.

Tom rose and walked to the panel, pressing a button. “*Sutter* here. Tom speaking. What’s up?”

“Wait one for your father, Tom,” came the voice of George Dilling.

“Son. Dad. I wanted to pass along several bits of information to you. The first one is from Harlan. He says that your kidnapppers... well, your *attempted* kidnapppers, have been captured. The woman, a French citizen as Interpol suspected, was critically injured when she crashed a Citroen sedan while trying to flee from their agents. She’ll survive. But here’s the big surprise. We both met her earlier. You even had her onboard the jetmarine you used to recover that college’s rocket. She wore a red wig and went by the name Tracie Robinson back then!”

Tom was stunned.

“Her accomplices, and he believes that there were actually three, were found hiding out in a cottage near the crash.” He could be heard chuckling. “Not too bright. They heard the accident and came to investigate. Interpol spotted them as they ran back to the cottage. Got them without a struggle.”

“Did anyone figure out if she was responsible for the college rocket failure?”

“There’s no outright indication, but perhaps once she recovers, careful interrogation will tell us more. Harlan says it is still under investigation whether they were hired by Atlas Samson directly or through his contacts in North Korea.”

“I’m glad they’re out of my life. What’s next?”

“Well, on a small note Dianne Duquesne and her team sent her little Y-2 engine to BlancMoto in California. They love it. We have their commitment for one thousand a month for at least two years.”

“That’s great,” Tom told him. “But, what’s the other thing and why can I almost see you grinning like the Cheshire Cat?” The tone of his father’s voice spoke of great glee. Something was up.

“Oh, I just wanted to tell you that your old man made a little decision down here. Actually, down at Helium City. You might recall that bulging dome down at the bottom of the dry well. I asked Hank to rig a heavy, pointed steel spear about the same size as your flying probe. He dropped it—tethered so we could do it again and again if necessary—straight down the well shaft and let it crash into that dome.”

There was a moment of silence so Tom asked, “Did it break through?”

“Oh, did it ever!” Now Tom absolutely could hear the excitement in the older man’s voice. “Tom! You should have been down there. I know I would have loved to be. It took eight tries but Hank’s spike finally pierced that dome. It’s another, even larger deposit of helium, Tom! And, we measured this one with a SONAR probe. At a bare minimum it is fifteen times what the upper well held. My helium-cooled reactors will be possible now!”

Emotions flooded over Tom. He was so happy for his father he could not put it into words. At last he said, “That is really great news, Dad. Is it the semi-liquid form like the upper well?”

“No, and that’s another piece of good news. It is cold down in that new well. So cold that the helium is not just liquid, it is a slush. We can either drop a pipe down there and pump it up as is, or—and for now this is what we’ll do—we just allow the top layers to warm up and become the super-saturated gas that we’ve been getting all along and draw it out as per usual. Oh! I almost forgot. The Navy destroyed the place where Atlas Samson was stealing the helium. He’d cut a new shaft at an angle from that point starting about two years ago. Must have cost him a fortune.”

“So, was he drawing off the helium like we thought?”

“He was. He’d fill his stealth sub’s tanks with it, surface and offload at night and go back for more. It was a constant operation for at least the past year. But, that’s at an end. He was sentenced to ninety years yesterday and his son, Hazard, will be taking over the operation once you get him back here. Interpol found at least three hundred thousand cubic feet of helium in holding tanks his father set up in Algeria.”

“Do we get that back?”

“The U.N. is taking charge of that and will have to make due with it for at least eight months. The seven nations that were buying his black market helium accounted for about thirty percent of the legal monthly withdrawal, and they are now completely cut off from any and all future helium! Oh, Tom. I am a happy, happy man. I’ve got to run and buy your mother some beautiful roses and go home and tell her how glad I am she married me!”

Tom was chuckling when he told Bud what had just transpired.

The middle of day nine arrived, and the *Sutter* arrived over Pluto. Tom decided to make at least five orbits at an altitude of just two miles.

During their orbits Tom and one of the technicians scanned the surface below using both the MSLLLED system as well as Tom's powerful SuperSight system. Part optical camera and part ultra-high definition computer enhancement unit, it would allow them to read a license plate down on the surface as if it were just fifteen feet away. They did not locate any license plates.

What they did find made Tom sigh. It was the crumpled remains of their first probe rocket.

"Well, at least we know it didn't just go flying off into interstellar space, Bud," he commented. But it hadn't been for naught. The rocket had dug deep into the surface exposing several layers down to about fifteen feet below the surface.

What the MSLLLED system found gave Tom a feeling of absolute elation.

An hour later once the crew finished another sleep period and had eaten, Tom called a meeting.

"We are going to go in and land. Dad's MSLLLED system says that the surface, all that stuff that you can see Jupiter's gravity keeps pulling away in chunks and bits, is mostly water mixed with hydrogen dioxide and a bit of methane. Nothing we can really use. But, and this is a big thing for us, we have a glimpse at the underlying surface courtesy of our crashed probe. There are solid rocks and minerals and streaks of frozen methane down there, but it is what is under that I'm interested in. We're going to nose in and dig some of it up for a really detailed analysis."

"What do you believe it is?" asked Michael Jayson.

"Dad's system managed to get a hint of great things to come. There is a seeming abundance of both vanadium and rhenium. Both of those have huge lists of possibilities and couldn't be more perfect for us to find."

He told the assembled men about all the electronic uses for the metals, as Mr. Swift had told him weeks earlier, but especially about the amazing possibilities for a new type of rhenium-based battery.

"It might put our Solar Battery business into the history books, but the possibilities are incredible. So, let's get going and see what we can find."

With everyone manning their stations Tom and Bud used the attitude jets to tilt the nose of the *Sutter* down toward Pluto's surface two miles away. Tom located an appropriate asteroid in the distant belt and pointed the maneuvering repelatrions at it. They gave the ship a slight shove and it began dropping slowly to the surface.

While Bud swung the repelatrions around facing front, Tom calculated the necessary forces and maneuvers to get them to the most opportune spot for their first mining operation.

"We're aiming for that dark spot on the horizon, Bud. By the time we get down to the surface Pluto will have rotated enough to bring it directly under us."

It took almost an hour to slowly maneuver down and into position, but they were soon balancing on the repelatrions with *Sutter's* nose just a few meters above the surface.

"Now begins the fun," Tom told Bud with a smile. He opened the intercom. "Captain to crew. In case you haven't been paying attention we are now about to rub noses with Pluto. As slow as we go in, there will still be a bump, so tighten those seat straps. Here we go—"

With the enormous mass of the *Sutter* around them, the bump into the surface felt only about as strong as touching bumpers as you attempted to parallel park a car. The moment it touched, Tom swung the repelatrions around to face the rear again and located his "pusher" asteroid. He applied a little power and the giant ship stood on its nose snug against the surface. And, though Pluto's gravity was minimal compared to Earth's, they still needed to remain strapped into their couches to avoid tumbling forward or down toward the surface until he reset the artificial gravity.

"Well, there's something I need to work on," Tom admitted to Bud. "I didn't make the artificial gravity automatically adjust to our orientation. Hang on." He switched off the artificial gravity that gave floor to ceiling gravity and turned on the ones in the rear walls meant to overcome nose down situations like this. With the "gravity" force now coming from the ceiling and the rear walls, they could still walk on the floor, but it was a bit trickier. They were able to unstrap and start walking on what had previously been a wall. He explained the change to the crew suggesting they use caution until they got used to it. He added, "Drilling team get the nose into the surface and get us ready to drill. I'll want about a hundred pound sample to make certain we get a little of everything. Let me know when you are ready."

"Roger."

It took just one minute before the "ready" announcement. Tom

gave the go-ahead to begin. Two of the mining experts entered the control room and strapped themselves into the side auxiliary seats, ready to operate the repelatron system to keep the ship snug against the surface.

Ten minutes later Tom and Bud made their way out of the cabin and down to the control room for the mining module. Automated equipment was taking core samples from each inch of the surface materials they dug up and subjecting it to tests. Tom was glad to see that there was practically zero radiation in any of the materials. Even less that the luminous hands on a watch might give off.

The dig went slowly, at about one-thirtieth the speed the digging and pulverizing geared jaws of the mining head were capable of. As each layer was examined grins and then smiles broke out on everyone's faces.

Along with the frozen gases, few of which were of much interest right at the moment, there was definitely both vanadium and rhenium along with notable traces of Armalcolite, bauxite and tungsten. What were missing anywhere below the surface were heavier elements such as iron, nickel and things associated with the inner planets.

Pluto, not a gas giant like the outer eight planets, nor a dense mineral trove like the inner four, was somewhat of a dichotomy. From a purely physical standpoint, it shouldn't be way out where it was. Tom had a theory and he shared it with the team as they waited for the results of the first dig.

"There are a few astrophysicists who believe, and I'm now seeing their point, that Pluto was once part of the planet many believe was blown apart and now form the asteroid belt. It makes sense. Something hit that planet, it exploded and one of the really large pieces flew off so violently that it found itself out past the outer planets and in a very odd orbit. Sometimes closer to the Sun than Neptune and often much farther out. The orbit isn't... well it *wasn't* circular either."

Most of the team could see what Tom was getting at and agreed it was a distinct possibility.

Once the sample drilling was finished Tom sat down with the mining team and planned out the next course of action. Now that he knew what was in the surface he wanted to dig up and bring back as much as the *Sutter* could contain.

"Let's concentrate on extracting the vanadium and rhenium. If we get some of the other minerals, well we can take care of that back on Earth. But, that mining and refining module we brought is pretty sophisticated. Let's see how good we can be about separating things."



While the specialists did their work, Tom and Bud went back to the control room. Sitting in their couches they were looking out in wonder at the scene surrounding them.

Jupiter, even as far away as it was, in conjunction with the additional solar rays warming the icy surface, was putting on a show. Dozens of small and a few large chunks of ice were constantly popping up off the surface and being very slowly pulled away from Pluto.

“Why is that?” Bud asked.

“My thinking is that the little bit of heating that’s going on now that Pluto is getting some real sunlight is softening up the surface. It must already be cracked under all that frosty layer, so as it softens a little, bits break away. And, even though it isn’t influencing Pluto as a whole, Jupiter is picking those pieces up and drawing them toward itself.”

“Well,” his friend replied giving little shrug and a satisfied sigh, “whatever it is, it’s putting on a beautiful show. I wish the girls could see this.”

“They can,” Tom told him. “I’ve been recording from five outside cameras constantly. We’ll get home with more digital footage than anyone is going to want to watch! I’ll be sure to ask for a special ‘Impress the ladies.’ DVD for you, and one for me as well.”

The intercom came to life. “Skipper? It’s Haz. I’ve been down here watching all the goings on and it looks like the rock men have all their samples. Did you want to come down or do you want the results up there?”

Tom and Bud headed back to the control room for the mining module. There, Haz met them and asked for a quick moment.

“Before you go in there, I just wanted to tell you that I’m having a funny feeling all of a sudden. And, no, it isn’t disorientation from the nose-down position. I probably shouldn’t have said anything right now, but I just have a general bad feeling about something. An omen.”

Tom hadn’t known Haz Samson for very long but he was a fairly good judge of people. Samson was a straight-forward man. If he were having an ill feeling about something, Tom would not dismiss it out of hand.

“If and when you put your finger on it, Haz, please let me know immediately.”

Samson nodded.

Turning to the group of mineralogist miners, Tom announced his presence by saying, “So, what have we got, men?”

John, the lead of the group shuffled over. He had a serious look on his face that broke into a lopsided smile just as he opened his mouth. It took him another moment to regain his composure.

“Well, we’ve mined out what would equate to nearly five hundred pounds back on Earth. That’s just about thirty-nine here. We are definitely finding the vanadium and rhenium Mr. Swift’s sensor device told us should be here. There’s just one little thing and we can’t understand it.”

Tom liked some mysteries and not others. He hoped this was one of the good ones. “And?”

“And, the two of them are not intermixed. There is a two foot layer of vanadium just a few inches under the ice and rock surface, and then another layer that we haven’t gone all the way through of just about ninety percent pure rhenium.”

“Skipper,” Bud gasped. “How could that be?”

Tom shook his head. “It can’t be natural, Bud. Someone appears to have coated Pluto in the very elements we really need!”

## CHAPTER 19 /

### BACK FROM THE SHADOWS

THERE WAS silence followed by a slew of questions from Mr. Swift when Tom radioed back to Enterprises of the find. With few answers, Tom suggested another message be sent to the space friends.

“By the way, did you ever get an answer to the earlier message? I never saw anything out here.”

“No. They’ve said nothing. I went back and double-checked my outgoing message to make certain I hadn’t been wrong or misleading in my wording, by the way. You can’t imagine how happy I am that they have provided us with several of these instantaneous transmitters. Can you image how hard it would be for us if we had to put up with the normal delay?”

Tom said that he would not wish to use old-fashioned radios from this point on.

“So, Tom. I think that you and I need to work on a message to our friends. As long as you and I agree on what we hope to glean from any answer then perhaps we can come up with the best way to word it. What do you think?”

“I think it’s a great idea. So, we should spell out what it is we found and then ask them maybe three things. My list would include what do they now know about how Pluto got here, then are they somehow responsible for this layering of the two minerals—perhaps more if we keep digging—and finally is Pluto now going to be here on a permanent basis. Oh, maybe four things. Will Pluto have any influence over the asteroids or be influenced by Jupiter or anything else?”

“I agree. Let’s get back in touch in two hours. We can compare notes and come up with the best wording.”

Tom spent the time writing and rewriting his message. He had difficulty in keeping tangential questions from being included. While communications got better and better between them with time, the truth is that one misplaced or incorrect word could still distort everything and cause the message and hoped-for reply to be meaningless. After comparing their very similar messages it was decided that Mr. Swift would beam out the following:

**Swifts to Space Friends. Currently  
on former ninth planetary object.  
Collecting samples. Have located**

**concentrations of minerals necessary for our work. We have four inquiries.**

**One. Are minerals natural or did you or any beings you know of place them here. Is this from your Masters.**

**Two. Is planetary object to remain in new location or will it be moved at later time. If to move, do you know when.**

**Three. Will planetary object cause any interaction with other bodies large or small in proximity.**

**Four. Why have your Masters moved planetary object to current location. Assistance in knowledge of all inquiries is important.**

While they waited, Tom ordered that the drilling continue. With the planet now about five percent larger than anyone previously believe, it might be possible that additional layers of pure minerals might exist.

An hour later the layer of rhenium suddenly ceased and a layer of solid methane was reached.

“That could be the original surface. If we keep digging up great chunks of it we’re just going to have to toss it all out. We don’t have the necessary pressure tanks to hold it. We’re outfitted for solids,” John called up to the control room.

“Pull back the big grinders and send down a coring drill, John. See how far the methane goes and what else might be down there. Let me know as soon as you find anything.”

“Roger.”

Haz entered the control room a moment later. “What’s up, guys?” he asked with a smile. “I have to tell you, Tom, that I did a little long distance research just now. Hope you don’t mind.”

“No. As long as you went through Michael and he set up an open signal for you.”

Haz shrugged. “It must have been one of the slow frequencies, Tom. It took me about forever just to get acknowledgement that my request was being processed by the search engine. Anyway, I looked up those two elements you’re digging through. Do you have any idea about how valuable this ship will be once you fill it?”

Bud looked at the tall man and told him, “The *Sutter* is plenty valuable empty, Haz.”

Samson shook his head. “Not like this, Bud. If we can bring back a full load of just one of them, preferably the rhenium, the going market for the load would exceed the build cost of this beauty by a factor of three.” He glanced at Tom and could see that the inventor already knew that information. Bud, however, was shocked.

“Jetz!” was all he got out before Haz interrupted.

“If you are looking for a ready buyer, I’m here. I can move a few things around and have the money to take all this ship can carry within two days of our getting back.”

Tom smiled at him. “Sorry, Haz. Not for sale. Dad has a few projects that have priority on anything Uncle Sam doesn’t insist on taking to repay them for the costs of the first two probes and this ship. But, assuming that we can get back here, I think I might be able to sell you one-quarter of that next load, and the same on any future loads.”

“Sell her to me, then,” Haz said. He patted the arm of Tom’s acceleration couch. “Name any reasonable price and I’ll buy the *Sutter*. To sweeten the deal you can have—gratis—one-third of anything I bring back. What do you say?”

Bud reached over and pushed Tom’s jaw up to close his mouth. “You’ll start to drool, slipper. Or, catch a few flies!”

Tom shook his head. “I don’t know what to say, Haz. Any deal like that is going to have to be carefully weighed and approved by dad and the U.S. Government. Even then, you may find that unacceptable limits could be placed on whom you can sell on to. What do *you* say?”

Haz smiled broadly. “Heck. I say if it can be made to work, the offer stands.” He stood up and slapped both Tom and Bud on the shoulder. “Just keep it in mind. Okay?” With that, he left the control room.

“Do you think he’s serious?” Bud asked rubbing his shoulder. Haz was a big and strong man and the good-natured slap had hurt a little.

Tom was moving his own shoulder, and answered, “You know what? I think he’s totally serious. I have no idea what dad is going to say, but anything is possible.”

“Diggers to Captain,” came the call. “We’ve pulled out a thirty-foot core starting at that methane layer and are in the process of separating things out. I just wanted to let you know we should have the results for each two feet every ten minutes.”

“That’s great!” Tom replied as he turned to leave. “Keep me up to date, please.”

“We’ll do it!”

Tom stopped by the kitchen in The Expanse for a snack. Spotting their CIA agent he greeted the man. “Hello, Agent Davis. You’ve been keeping pretty quiet and low-profile the entire trip.”

Davis looked sullenly at Tom. “Not much to do. Probably a waste of my time even being here.” He rose and walked out of the large room leaving Tom to shake his head in wonder.

An hour later Tom had all the information sitting in front of him. Below the twin layers of vanadium and rhenium came layers of frozen methane and—the normal surface of Pluto—below which was a three foot stretch of lightly ferrous rock, followed by a vein about six inches thick made up of a mix of zirconium, platinum and titanium, and then nothing but multiple striations of volcanic rock.

“It appears that the real mineral value is only on the surface, and that just isn’t a natural occurrence. It’s almost as if someone reached into dad’s and my minds and pulled out what we had on our wish lists.”

“Wait. What about all those other things like the titanium and platinum?” Bud asked.

“Something for a later trip, Bud. If what I suspect is true, and that is that the surface metals were placed there for us to find, they will be in almost even layers all the way around Pluto. Who knows about those other things? What if that core sample went through a small pocket of platinum and it’s the only one on the planet?” He gave Bud a meaningful look.

“Right. Just don’t tell Sandy about it. I don’t want to have to explain why she can’t be the first girl on Earth to have an engagement ring made from Pluto Platinum!”

After checking the clock, Tom let the crew know that he was calling for a mandatory rest period. “Take ten, folks. That’s as in hours. After we eat and get cleaned up, I want at least seven hours of sack time for everyone. Then, we start to do some serious mining.”

When work started back up, Tom had already formulated a plan of action.

“For starters I want the Radetector input sensor lowered down into the core hole. I’d like to see what might be even farther down if

that is going to include anything giving off radiation.”

The sensor tip was attached to the main Radetector equipment by a one-inch plastic-coated cable and power set. It was very flexible, and that became a small problem when Tom wanted to get the sensor down faster. As one of the techs shoved the cable down, it wiggled around and jammed against the sides of the core.

“That’s not working, skipper. I’ve got to pull it back out a little and try again.”

Tom told the man, “This time don’t let me tell you to go any faster than Pluto’s gravity wants to pull on that thing. How fast is it going down, by the way?”

“Well, maybe two feet a minute. It’s going to take a while unless someone has a long pole.”

With nothing of the sort onboard, Tom had to wait. As the sensor neared the halfway point, he switched the equipment on. Seconds later he called a halt to feeding the probe any further.

“I’ve got something,” he yelled out. After finding out that the sensor tip was now sixteen feet into the core hole he tapped in several commands on the keyboard. “We’ve got something emitting radiation about thirty feet farther down. That puts it around thirteen or fourteen feet below the bottom of the core hole.”

Haz had walked up behind Tom. He asked, “Do you know what it might be?”

Tom shook his head. “Not yet. I need to get a little closer. Like right at the bottom of that hole. Ernie? Go ahead and lower it some more. Only about another ten feet, please.”

The tech did as he was asked and little more than five minutes later he reported, “The probe is now at twenty-six feet into the core hole. Only about four more to go. I’ve stopped here. Is that okay?”

“Great. Thanks,” Tom said as he concentrated on the Radetector screen. “See that?” he asked Haz pointing at one of the spikes of information that now took the top half of the screen.

“Yeah. I take it that the fact it is red and all the others are green and yellow and blue has a meaning. Radioactive?”

Tom nodded but said nothing. The computer was beginning to put the composition figures on the screen.

“That’s thorium!” Tom exclaimed, excitedly. He turned and smiled at Haz.

“Uhhh, I can see that makes you happy. I’m afraid I don’t know enough about thorium to share the joy. Why is it a wonderful thing?”

Tom was beginning to explain when Bud walked up. After telling

the flier of the find, and getting much the same reaction that Haz had given, Tom launched into the explanation.

“Even though we have a lot of thorium on Earth, more even than we have uranium, it is difficult to get a good, pure source of it. If we had it, safer reactors would be possible. One of the best things about it is the lack of isotopes. Uranium has far too many and they react differently so it can be unstable. Thorium can be made to be an effective nuclear fuel yet substantially safer to handle.”

“Not safe to handle as in juggling balls of it, right?” Bud asked.

“Well, it has uses in light bulbs, arc-welding and other applications, so all by itself it actually is relatively tame stuff. But it isn’t really effective until it is combined with U-233. In what is referred to as breeding, they become a pretty good nuclear fuel.”

“So, why didn’t we find that in the scan you did with this equipment before we touched down?” Bud asked.

“It couldn’t see through the vanadium and rhenium layers. I’m not certain why. We need to leave it down there for another hour or so to get a good picture of how widespread it might be and how deep.”

Tom asked Ernie to tie the cable off and that he would be back later.

When he did return it was to excellent news.

“There is a definite field of thorium down there. It goes out a hundred feet to the left and three hundred to the right, and it’s at least fifty feet deep. After we mine up a lot of the vanadium and rhenium I’d like to bring back one of our holds full of the unprocessed ore down there. Dad will be tickled pink over it!”

Over the next fifty hours the *Sutter* mined first the upper vanadium layer and then the lower rhenium layer. Seen from the outside it must have looked like a gold pig snuffling in the dirt. It would rise a little and move, drop back to “kiss” the surface and begin grinding down and around taking in tons of the almost pure metals.

As quickly as it came in, everything was given a slight smelting to liquefy the metals and so that impurities—perhaps less than five percent—could be separated and discarded.

Then, once two of the holds were brimful of vanadium and two more filled with rhenium, Tom had the *Sutter* positioned over the original sample hole.

It required several hours to dig away enough of the real surface of Pluto to expose an area large enough for *Sutter*’s nose to enter the hole and still have ample room to move the extended drill head around as it dug up the thorium-rich dirt and rocks.



Bashalli's compactor came into its own as it was utilized to give them a full hold—with no voids and no unwanted pockets of vacuum.

Holds one through four in the *Sutter* were now full of the vanadium-and rhenium-rich materials they had been able to drill and dig out over the previous three days. The partial smelting meant they would be returning with more of the actual metals than if they didn't have that capacity. In all, Tom computed an additional 17.25% of the metals had been squeezed into the tanks.

With Haz's assistance he had run more calculations on the probable value of the cargo.

To Haz's amusement, Tom sat in stunned silence when the final numbers were tallied.

"That's enough to pay back the U.S. Government for everything they kicked in on the two probes and the *Sutter*, plus have enough of the metals for months of projects that dad wants to tackle."

Now, Haz laughed. "Do you really think that the Government is going to ask you to repay them for building, launching and manning rockets and this ship that *they* insisted you build? If I were you I'd just not say anything about paying them back until they send you the bill!"

It actually made sense to Tom. The Government might request a portion of the cargo, but it was unlikely they would want repayment. It was almost a load off his mind.

Haz headed out to get ready for take-off while Tom and Bud finished their drinks.

Tom knew that once they returned to Enterprises he needed to do more work on the retrieval shuttle to ensure the additional weight would be accounted for, but he believed his Chow-influenced air braking system would do the trick. For the time being he was satisfied to sit back and sip on his final coffee before the crew had to go back to sucking it from heated plastic packets.

"I wonder if it's possible to add something to food and drinks that would be absolutely neutral to our bodies but the gravity system would recognize and push on. I'd love to drink from a mug while we are traveling through space," he told Bud as they left The Expanse and headed up to the control room.

"I don't want to get all disgusting, but it might make going to the bathroom easier. Even though we stick to the deck, I'm not enjoying using the facilities. Besides. If we ever expect to get the girls to come along with us—" He left the rest unsaid.

Tom grinned and nodded. "Say no more!" A minute later they were entering the control room. Tom made the ship-wide

announcement that take-off would be in five minutes.

Now, all that was left was the trip back to Earth and the reunion with everyone they had left behind weeks earlier.

“That’s strange,” Tom said. “The radio isn’t on. Hey, Michael,” he called back to the radio room. “What’s going on?”

“I don’t know, Tom. Three minutes ago my power shut off for five seconds and then surged back on. Now, I can’t get the radios to work. Not the digital one or that instant one we’ve been using. I’ll let you know if I find anything.”

“Okay,” Tom told him. He turned back to Bud. “Luckily we don’t need the radio to get back home. You were talking about our ladies?”

“We’ve got a lot of catching up to do with the girls, huh?” Bud asked as they were climbing into the pilot and co-pilot seats. “I’ve been doing some serious thinking up here.”

Tom glanced over at his friend. “What sort of thinking?”

Bud gave a slight gulp noise as he answered, “About Sandy and me. About us. I mean, about us and the future.”

Tom waited. After knowing Bud for more than four years he knew that if you rushed him, Bud would blurt out things he later regretted and tried to take back. All Tom said was, “Oh.”

Finally, Bud cleared his throat. “What would you think of having me for a brother-in-law?”

Tom smiled as he reached out and started up the master control computer. “I’m thinking that my sister would not give me a choice, flyboy. You know how crazy mad she is for you. And, although I won’t apologize, I know that my getting engaged to Bash has sort of put a lot of pressure on you. Are you really ready?”

Bud hesitated, but answered, “I don’t know.” He stopped for a moment and then said, “Yeah. I’m pretty sure. I can’t imagine being with anybody else. The only thing is that I’m not sure I’m mature enough. For her. Maybe once I see her it will all become clear.” He smiled over at Tom, but soon stopped when he saw a concerned scowl cross Tom’s face. “What’s up?”

Tom pointed to the large display that sat in the center of the control panel. “That.”

Bud’s eyes looked where his friend was pointing. In the middle of all the green lights was a single red one. “Uh-oh.”

“Uh-oh is right!” Tom told him. “If we don’t get all greens, we’re not going to go anywhere. *We can’t take off!*”

## CHAPTER 20 /

### WE NOW RETURN CONTROL...

NOTHING SEEMED to be working correctly. Tom calmly shut down the master computer, waited ten seconds, and then rebooted it. It made the normal *ding* noise, went to the gray screen and the overlay of functions popped up. All indicators underneath were either yellow or orange, depending on whether they were waiting to be started and tested (yellow) or whether they were actively undergoing their start up/test phase (orange).

One by one the orange squares turned green and as they did, other yellow squares turned orange. In all the process normally required one full minute. But, as Tom could see from his watch, it had already been two minutes and only about three-quarters of the indicators had turned green.

“At least there are no reds, this time,” he said out of the side of his mouth to Bud.

“Uhhhh, Tom,” Bud said, pointing at the screen. “I swear that one has gone yellow, orange and green twice before, and now it’s yellow again.”

Tom looked at which one Bud has spotted. It wasn’t one he wanted to see not behaving properly.

“That’s our plasma control circuit. Transfer it to your side screen and blow it up. Maybe we can see the specific function it keeps stumbling over.” Tom looked hopefully at his friend. It was a long shot as all green lights only came on once all functions had been checked and verified.

Bud stabbed a finger on the circuit indicator and moved it quickly to the right side of the screen. A second later it popped off the main screen and onto the smaller side screen directly in front of him. Tapping it twice expanded it out showing about thirty different sub-functions. As he watched they went from yellow to orange to green in order of their appearance on screen. At the end of eleven seconds, all sub functions showed green. He was about to mention this to Tom when one of them—he quickly counted back to position nineteen—flashed a few times, turned red for a split second and then returned to its yellow state. Everything after that particular sub-function also went yellow.

“Skipper, we’ve got a problem in the arc field generator for engine two. It keeps checking out as okay then going bad and then resetting everything after it. See?” he pointed to the indicator. They watched as everything else went to green, and then it repeated it

failure sequence.

“Damn!” Tom swore uncharacteristically. “That’s one of the spiral capacitors we had to outsource. I’m not certain we have a spare!”

“You go check it out, skipper and I’ll complete all the other checks. If that’s the only problem, maybe it is safe to take off.”

Tom shook his head. “No, it isn’t. It’s one of the safeguards of the plasma drive system. If one goes off line, the other two drop off as well. Otherwise we’d get swung around in ever decreasing circles until we either stop, or break up from the G forces. Damn, damn and damn!”

He jumped up and headed back to the hatch to the main part of the ship. There he came across Red Jones.

“Hey, skipper. I thought we were taking off. Troubles?”

Tom spun the pilot around by his shoulder and said, “Come with me. I’ll explain on the way.” The two men headed to the first ladder down and kept descending until they reached the heavy bulkhead door leading to the drive unit. By the time they got there Red had been apprised of the situation.

“I may have some good news for you, Tom,” he said as they waited for the hatch and air lock to cycle and open. “Before we left Enterprises, Hank Sterling handed me a crate of additional supplies. He told me to stow them in the drive pod. They’re in locker number seven. Don’t know exactly what’s all in there, but I did peek and think I saw the spiral cone of one of the capacitors.”

Tom let out his breath. He hadn’t even realized he had been holding it.

“Red? If that’s correct you can’t imagine how fortuitous it was for you to be coming forward when you did!” The light on the panel next to the door flashed green and then went solid. The door hissed as the seals inside deflated and it popped open a few inches. “Let’s go!”

Inside, Tom located the light switch and soon had the upper storage and workroom illuminated. They rushed over to the bank of lockers and Red yanked the door open on number seven. Inside they both could see the three-foot square tomasite storage box. Together they eased it out and set it on the floor.

Both men gasped in dismay when the top was opened and it revealed nothing in the box except for about a dozen printed circuit boards.

“Gee, Tom. I’m really sorry to get your hopes up like that,” Red told him. “But, I could have sworn that the black cone was visible

on one of the large capacitor boards. I really could have.”

Tom was about to tell the man that it wasn't his fault. That anyone could make a mistake given only a quick peek, when they both heard someone step up behind them.

“Looking for this?”

An icy chill ran down Tom's spine as he straightened up and slowly turned around.

“Hazard Samson!” he practically yelled. “So, you really *are* working for your father, huh? I knew it was all too good to be true. Ratting on your father was a nice touch. But, how do you expect to get out of here? Or, did daddy talk you into a suicide mission?” Tom was red-faced and so indignant that he was about to blow up.

Samson simply handed him the circuit board with the two-foot diameter spiral capacitor mounted on it.

“Here. And, before you vilify me any further you might want to come see what—or rather whom—I found down here trying to hide that. As they say in the movies, ‘Walk this way!’” With that he turned and headed forward along one of the narrow catwalks that led from the storage area to the forward fuel storage.

As they came around the final corner Tom and Red both saw a man, now strapped to one of the dividing mesh panels with heavy zip ties. His head was slumped down onto his chest. Haz stepped over to the man and grabbed a handful of hair. He gave the man's head a yank upward and held it there for Tom and Red to see.

“William Davis!” they both exclaimed.

“Our special CIA man is our traitor?” Tom asked incredulously. “But, how? He was vetted by the agency. Harlan Ames knows him for crying out loud!”

Red reminded Tom of something. “Harlan never got a chance to see him once he reported, skipper. Remember? There was all that stuff going on across the other side of Fearing when we arrived and got into the *Challenger*. I'm thinking that Harlan never got to eyeball this guy.”

“Then,” Tom concluded, “that little ‘invasion’ was a ruse to keep Harlan busy while this man got aboard. And, I let it happen because I wanted to get off fast so Harlan never had the chance to make his final check. I owe that man an apology like you can't imagine. How did you know, Haz?”

Samson smiled. “Like many of the thugs in my father's organization, this guy has a tiny tattoo of an otter on his ankle. Innocuous to most people and all but unnoticeable. I saw it yesterday when he spilled his hot coffee at dinner. He yanked off

his trousers before heading to his room to change. I saw it as he passed by. I *knew* I was having some sort of premonition.”

“But, you should have—”

“No. If I had come to you and said that you have a CIA man with a small tattoo that I only saw for a split second and that he might be a spy or worse, you would have looked at me as if I were crazy. You *could* have told him to keep an eye on me! As it is, you gave me the rolling eyes when I told you I had a feeling.”

Red was shaking his head. “So, you decided to follow this guy to see what was going on?”

Samson smiled again and nodded.

“What if he attacked you?” Tom asked.

Samson’s smile got even wider and he held out his muscular arms and looked askance at Tom. “Would you attack someone like me? Without a weapon?”

“But, what if he had brought one onboard.”

Haz laughed. “He didn’t. I checked his room yesterday.”

Nobody said the obvious that there were plenty of things that might be used as a weapon around the ship.

After calling up to Bud to tell him of the situation, Tom and the other two men headed down and back to the site of the inoperable capacitor. Once there it was easy to see why it had been giving a bad signal.

It wasn’t even there.

In its place was a small computer board hanging from its control cable, and that was plugged in where the capacitor ought to be. Looking around Red spotted the original capacitor in a corner, now a smashed pile of junk.

Tom flipped a switch shutting off all power to the connector panel and then pulled the pirate board away. He shoved it in a pocket, determined to study it to see how it worked at a future date. A minute later he had the replacement capacitor board mounted and the power turned back on.

The single green LED shown steadily, so Tom and Red headed back up. Samson told them he would guard their prisoner. “I’ll drag him up to his couch and strap him in all snug and *tight*. Really tight!”

Ten minutes later Tom called out over the ship’s intercom, “Okay folks. We’ve had a little excitement, but everything is checking out on the big board up here. Strap in until we get to steady speed. We’ll be heading out in fifteen seconds. Oh, and the

next time you see Haz Samson, shake his hand. I'll tell you why later!"

Giving Bud a nod, Tom's hands moved across the control panel activating all the necessary systems. "Here goes, flyboy. If everything works right, and we have no more surprises, we ought to be getting home just in time for you to pop the question to Sandy."

Using its repelatrions, the *Sutter* backed away from the surface and was soon in an orbit about half a mile above the icy landscape. Tom shut them off and started the plasma engines.

With practically no sound, the *Sutter* began to move forward. It was slow and steady at first so that Tom could do more system's checks, but everything was operating at normal capacities. Three minutes later he made the necessary course correction that would point them back toward Earth and pressed the Autorun button.

The view out of the giant tomasite viewscreen swung a little to the right and settled down. It would be difficult for another two days to tell that they were moving. After that, they would be close enough to the asteroid belt that individual bodies would be visible and moving. Two days later and they would cross over the 'top' of the belt and make another course correction.

On the fifth day the radioman called Tom. "Skipper, it's Michael in the radio room. We're getting a signal on that frequency you use to talk to the Martians. Do you want to come see this?"

Tom chuckled as he activated his headset mic. "Michael? They may be located somewhere near Mars but the definitely aren't Martians. We all call them the space friends. I'll tell you about them after I come see what they're sending. Out." He turned to Red who was sitting in the co-pilot's chair. "Take her, will you. Oh, and call Bud up to take second seat. I'll be in the radio room and then I'm going to go see our prisoner."

"Say, Tom. I thought our radio gear was out of service."

"Oh, Michael and I got it up last night. Sorry if I didn't tell you. Well, the truth is that we got the old speed of light radio up. The one our friends gave us was scorched by the electrical surge, plus we have absolutely no idea how to repair it. Communication's still a little weak but we did get a verification from the Outpost that they receive us."

He headed back and left via the security hatch. The radio room door was just ten feet down the corridor.

"Hi, Michael, Tom said as he stepped inside and resealed the door. "Show me what we're receiving."

Michael moved his chair to one side so that Tom could slide

another in front of the main screen. "That."

**Space Friends to Swifts. Have tracked flight. Uncertain of reason for delay. Are you in peril. Track indicates some movement now. Was this anticipated stop. We have information from Masters on planet body. They achieved balance in gravity-orbit-mass-speed-angle and position from solar center.**

**Body to remain in position three solar cycles of your planet. Masters to reposition body at intervals to keep within relative distance of your planet. Understand that no effect to your planet balance will occur. Also no effect to planet you call Mars, over this planet we orbit.**

**Master Garl once again has issued message separate to this. It communicates**

**Tom Swift. Planetary object is gift of appreciation to you for help in recent contact and visit by our subjects science team. It has been modified and contains minerals near to surface for you to extract. All minerals are within distance of length of your current vessel. End.**

**Space Friends to Swifts. Do not understand full meaning of Masters message. Do you.**



A moment later Tom had to laugh as an answering message, most probably from his father, came up on the screen:

**Swifts to Space Friends. We have  
received the message and understand.  
Appreciation to you and your  
Masters.**

Tom thanked the young radioman and went below toward the makeshift cell that had been set up in a storage room. As he approached, he was intercepted by Haz Samson.

“I’m about fed up with that guy and his silence. If you’ll play along with me I have an idea.” He explained his thoughts. At first Tom was against it, but after receiving reassurance from Haz that it would not be taken too far, he gave in.

Before opening the cover over the door’s circular view window he reached down and pulled out the ballpoint pen in his shirt pocket.

“Clip this to your shirt so the top is somewhere in the opening. It’s a video camera. We may need proof of anything he tells you.”

Just as he had been the other five times Tom or anyone else had attempted to speak with him, the prisoner remained tight-lipped and simply scowled at Haz.

On other occasions, Haz had shrugged and left. But, today he was feeling a little tired and cranky and mean-spirited, so when the man just snarled at him, Haz told him, “I really just came down to tell you that you have half an hour before your sentence is to be carried out. But, suit yourself!”

As he turned away from the small window the man sat up. “What does that mean?” he demanded.

Haz turned back and appeared to be considering what or how he should tell the man. This got him another snarling demand for information.

“Oh. I thought our Mr. Swift might have told you. You have been tried *in absentia* for various crimes including ten counts of attempted murder, piracy in space, and destruction of property that might cause death in others. Guilty on all counts. We execute you in...” he pretended to glance down at his watch, “twenty-eight and a half minutes. Good-bye!”

“Wait! You can’t do that!” the man shrieked. It was obvious that he was near a breakdown. “I’ll tell you everything. I want to make a

deal. Don't kill me and I'll tell you everything!" He began sobbing.

Tom strove to maintain his composure as he stood to one side.

Haz reached out a hand and patted the inventor on the shoulder. "Perhaps. But I'll have to know what you can tell us before I can ask our captain to radio back to the court on Earth. What do you have to say?"

Over the next five minutes the now desperate man poured out a story detailing the involvement of Haz's father, Atlas Samson and his organization. When they had been thwarted in their attempts to bleed the Helium City wells dry, Atlas Samson had ordered that Tom Swift was to be killed. The prisoner, who now told him his real name was Lars Bjornson, was a man already facing a death penalty in his native Belgium and had jumped at the opportunity to take the place of the CIA man assigned to the mission. His family would receive a large payment.

"He was killed and dumped at sea. I snuck onto the plane in Washington and took his place. I'm sorry that he is dead. But your father ordered it! He told me that destroying any part in the plasma drive would have you all so busy that I could slip poison into Swift's next meal."

"How did you ever think you could get away with it?" Haz demanded.

The man barked out a laugh. "With your father's reputation it would have been easy for a CIA agent to implicate you while the rest of the crew got this ship back to Earth!"

He insisted that he would say nothing more until Tom could get word to him that his 'sentence' had been commuted.

"No need," Tom told him as he stepped up to the window with a smile. He reached over and pulled out the combination pen and digital video camera, waving it at the man. "We have your video confession right here. Oh, and there was no death sentence. At least, not on my ship!"

The prisoner's eyes rolled up in their sockets and he sagged to the right, quickly rolling off the seat to the deck.

The remainder of the trip went smoothly. They arrived back in orbit and parked the *Sutter* near to the Outpost.

Harlan Ames, usually reticent to fly into space, met them with a Security team at the airlock when the *Sutter's* crew entered the space wheel.

"We got your message from the other day and the video file. Atlas Samson somehow escaped and has gone deep underground and nobody can find him. However, and this is news to you, Hazard

Samson,” he stated looking at the large man, “you will be taking over all control of your father’s former operation. The United Nations and the European Union both insist that everything be broken up and sold off. No one involved in the company at the present is to be retained nor are they to be involved in any sale. All business records will be turned over as well.”

Haz smiled and nodded his head. “Good. Consider the entire operating venture to be dead and broken up within five days of my getting back to Earth. Oh, and I owe my father for trying to have me arrested or worse. I can give you three possible locations my father might be using to hide in.” He winked at Ames. “He’ll be in one of them!”

Tom asked to borrow Ken’s office and computer for a few minutes. When everyone left and the door closed, he mentally composed the message he was about to send to Bashalli. With a little start, Tom watched as a message scrolled across the screen.

**Peek-a-boo, boy wonder. Guess who! You did it. Your Uncle S sends best regards. For once it wasn’t so much your tax dollars as it was your own good, old, American know-how at work. Be sure to keep your golden ship digging up there.**

**If your friend’s timing is correct, we see at least 30 trips. The *spoils* will be all yours. Use them wisely!**

**Oh, and your code no longer works. Ciao!**

Giving a slow shake of his head, Tom finished writing his email and sent it down to Earth.

That afternoon everyone, including Ames and his three men plus their prisoner, now in handcuffs and leg irons, transferred to the *Challenger* and headed back to Earth.

Tom had made the decision to land right at Enterprises earlier, so he wasn’t surprised by the reception committee that had gathered to meet them, including the college rocketry team with Jack Sawyer standing right in front.

As he was shaking hands with his father and scanning the crowd, two very feminine arms encircled his waist from behind. He didn't have to guess or ask. He recognized the skin, the ring on her left hand and the scent of the light jasmine fragrance she wore.

"Hello, Bash," he said turning around in her embrace and receiving a kiss for his troubles as Mr. Swift walked away with a smile on his face.

"Oh, Thomas. I am so happy to have you back all safe and here with me. And, I will allow you to tell me all about the trip, but not until tomorrow and only if you liberally sprinkle the story with remarks about how much you love me and how you will never leave me to go away into space again!"

He smiled at her and nodded. "As much as it pains me, I think that I may need to hang up my outer space skates and stick to Earthbound ones, Bash. So, unless it is vital, or I can think of some way to take you with me, I promise no more lengthy space trips!"

Bashalli smiled and nodded, understanding that his definition of "vital" and hers probably would never match. But, for the time being she was happy.

Neither of them realized that in the coming months two momentous occasions would collide: 1) their forthcoming wedding, and; 2) Tom would find himself back in space trying to unravel the mystery of *The Galaxy Ghosts*.

But, for now, she was happy just to be with him.

<•>—< End of Book >—<•>