

THE NEW TOM SWIFT INVENTION SERIES

TOM SWIFT
And The
Galaxy Ghosts

By Victor Appleton II

Made in The United States of America

Technical edit by Greg Hall

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Tom Swift And The Galaxy Ghosts

By Victor Appleton II

While testing a new spaceship capable of traveling between the physical layers of 3-dimensional space, Tom and Bud stumble onto an unbelievable sight: an anomaly—a black hole—that is definitely not acting like any black hole they’ve ever heard of.

Things begin to get strange when they get a visual contact with something that all their instruments say isn’t there!

The strangeness goes further when the apparition in front of their ship seems to be beckoning to them. But, do they want Tom to come closer? To what? Some exciting new discovery? The truth behind the black hole?

Their doom?

When Tom decides that safety must take precedence over any further investigation their ship appears to be attacked by the mystery apparitions. They find themselves stuck, their ship close to total failure, with no way to repair it or to get home.

Without warning, the black hole begins drawing them in. Can they get the *Galaxy Traveler* working before it is too late?

This book is dedicated to the person who hurried through writing the original, the other person who padded it out and made it incredibly horrible, and the third man who refused to allow it to continue by simply ignoring it and starting fresh. But—and you have to admit it is a stretch to do a “Tom” book that doesn’t have an invention or location in its name—it is an interesting title. So, here’s a shot at resurrecting it, **in title only!**



As the power reached its peak, a shaft of incredibly orange light shot out... and a spiral hole appeared in space! **CHAPTER 15**

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AUTHOR'S NOTE:

Before you shake an angry fist at the sky and proclaim that you are mad as hell and this is an abomination to the ethos of Tom Swift, I beg you for just a moment of understanding. As the Tom Jr. series was winding down very little care and attention was going into the final manuscripts. The writing may have been on the wall, but it wasn't making it to the printed page.

In taking a title from a book that probably should have received early termination, I am hoping to provide a story that might have been had it appeared earlier in the series. With some differences. Like if it had come from a different author.

With the deepest respect to Scott Dickerson and his reimaged books, and his very enjoyable substitute to the final book, *Quantum Telesphere*, I have been pondering the loss of this old title, even with the addition of his substitute book.

So, give this story a chance. As I say, it is my small attempt to resurrect the title, but not the story. That original story is best left lying next to the road, in some damp literary ditch, where it may break down into its component words and float free so that others may use them. It is recycling at its best.

I've set my book in the world of my other novels and not the Tom Jr. world—there is no Phyllis... it's Bashalli, and Mr. and Mrs. Swift are Damon and Anne, not Tom Sr. and Mary.

No mater what version of Tom stars in it: Long live Tom Swift!

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Tom Swift and the Galaxy Ghosts

PROLOGUE

The young man stood, ramrod straight, facing a man he had only met a few weeks before. And, while he instinctively understood that what was being said to him was important, even life changing, he couldn't shake the feeling that he was slowly strangling.

The collar of his shirt—one that his mother had purchased for him when he couldn't get away from work to do it himself—was a half-inch too tight but felt as if it were a *couple of inches* too small. He attempted to reach up to adjust it but found that his right hand was immobilized in a vice-like grip.

He knew better than to pull his hand away at this moment. It might cause embarrassment and would require lengthy explanations later. He decided to bide his time.

Trying to ignore the sensation of fingers scratching and clutching at his throat, he allowed his vision to de-focus to relax, a trick he had mastered years earlier that let him appear to be looking directly at the person in front of him while actually looking right through them, all the way to infinity. His brain could register the main gist of the speaker while allowing him to continue to ponder other issues.

His mind wandered over the mental list he had compiled weeks earlier. He was almost certain that he had thought of everything, at least those things that could be planned for. The trip he was about to embark on—at least once this current event was through—was unlike anything he had done before. On the positive side, he had some inkling about the destination. No real danger, just “uncharted waters” to navigate.

In reality, not unlike many other adventures he had already undertaken in his twenty-one years.

Except—

No, he thought, this one is definitely different. New, exciting and very, very different.

As with many previous journeys, he had not been to his destination since, well, ever. It would be a first, but it was something he had been prepared for most of the previous eight or nine years.

He glanced to his left at the person who would be going with him. As he did, his collar reminded him of its close and tight proximity to his Adam's apple. It was difficult, but he suppressed a tickle and gathering sneeze he knew would interrupt the man front of him and possibly cause embarrassment for his companion.

He snapped out of his reverie when the man gave a polite but prompting cough of his own and asked again, "So, do you?"

Quickly gathering his wits and reviewing what the man was likely to have asked about, he nodded and replied, "Oh, absolutely. Yes. I mean, I do."

"Good. Well, then..." the man standing there took a deep breath. "By the power vested in me, I pronounce you Thomas and Bashalli Swift, husband and wife!"

CHAPTER 1 /

URGENT SUMMONS

EVERYONE admitted that it had been one of the most low key and enjoyable weddings and receptions they had ever attended. To the newly married couple, the four hours during, and following, the ceremony were a blur. When they finally left for their honeymoon, both were exhausted.

Tom's best man and best friend, Bud Barclay, and Bashalli's maid of honor and Tom's younger sister, Sandy, drove them to Swift Enterprises and then flew the couple down to New York's Kennedy International in one of the Swift SE-11 commuter jets—nicknamed the Toad by Bud for its appearance from the front... its two jet engines were mounted above the wing and the underslung body, giving the appearance of bulging eyes.

Bashalli's parents had begged the couple to allow them to make all of the honeymoon arrangements. While Bashalli had been hesitant, Tom felt that it was an important step in securing the absolute trust of Mr. and Mrs. Prandit. In the end, and after having a private and stern warning talk with her father, she finally agreed to it.

To both their delights, the two-week trip included a week on the Hawaiian island of Maui with an additional week in Japan.

By the time they returned to Shopton, they were ready to settle down and move into the house Tom had purchased in a recently established neighborhood on the same side of Enterprises as his parent's home, but one mile closer and a half mile nearer Lake Carlopa. It was a little closer to Enterprises for him and a bit farther away from her parents' home than Mrs. Prandit had hoped for, but they believed that they wanted some level of privacy. The new house provided that.

Although sporting four bedrooms, they had agreed, practically immediately upon becoming engaged, that they wanted to put off starting a family for several years, possibly even ten, so that they might enjoy as much time together as possible.

The Monday after their return, Bashalli went back to her job with a local advertising agency, where she was their chief graphic designer and artist-in-residence, and Tom headed back to Swift Enterprises—the four-mile-square facility his father had started almost nine years earlier—with at least a half dozen inventions in mind that had come to him while on their honeymoon.

Walking up to the desk outside of the office he frequently shared

with his father, a tall, slender and well-dressed man rose and came around to shake Tom's hand. "Welcome back, Tom," he said. "I absolutely loved your wedding. Thank you for letting me bring my aunt Illoquacia with me. We had a wonderful time."

"Thank you, Trent," he told the man who was the executive assistant and personal secretary to his father. Mumford Trent had been working for Tom's father, Damon Swift, for many years and was consisted to be so well organized that many of the things he did seemed to either be anticipated or the result of some form of magic.

The only fault that Tom had ever found in the man was his steadfast refusal to accept being addressed by his first name. It was not, as Tom had discovered several years earlier, that he disliked his own name, it was the case that Trent felt—deeply believed—that his position required a level of professionalism that precluded familiarities such as first names... At least, his own.

After acknowledging the man's greeting, Tom walked into the spacious office that held both the desks for its two occupants as well as eight overstuffed and comfortable leather chairs arranged around a low table for conferences, plus an entire wall of shelves devoted to scale models of many of the inventions of both father and son.

"Greeting to you, Son," his father called out from behind his computer screen. "You've made me lose a bet with your mother. She said you'd be back right on time and I told her you would stay away at least a couple of extra days. Perhaps, even a week." He stood and shook Tom's hand.

"I guess Mom knows me best," Tom replied, favoring his father with a wide grin. "Did I miss anything?"

"First things first. Did you and Bashalli have a good honeymoon?"

Tom nodded and told his father about the different places they went and the things they saw.

"You may want to check with your mother on this, but I seem to remember that honeymoons are about a lot more than 'going places' and having great meals. What I meant was did you and your lovely bride find that blissful moment when you realized that all the butterflies and nerves and reservations either or both of you had just disappeared, and that you knew with absolute certainty that you two were meant to be together?"

Tom looked at this father, wide-eyed. "Gee, Dad. How did you know?" He and Bashalli had been lying in each other's arms on the second night of their trip when that realization had hit him. When he asked her about it, she smiled and told him that it was about

time.

"I knew it from about five seconds after the ceremony, Tom. Leave it to the man to lag behind," she had teased.

Damon Swift looked at his son. "Honestly, Tom. From your almost shocked reaction you'd think that your mother and I weren't married these twenty-two years. Of course I know all about it. Hit me like a sack of potatoes right between the eyes about a day after the wedding. I think it took me that long to get my breath back."

They talked for a few more moments, sharing something they had been unable to prior to Tom's marriage, before getting down to company business.

"What did I miss?" Tom inquired. "Did you ever get that two-man fish delivered?"

He referred to a miniature submarine, powered by one of Tom's small atomic power pods that Mr. Swift had been designing several months earlier when Tom was trying to figure out why Pluto had suddenly disappeared. Built to resemble a very large sunfish—adult sunfish routinely grew to more than half a ton and very large in size—it swam like a fish using its tail and fins, and presented a SONAR reflection of a living fish. This was made possible by a new coating Mr. Swift had created that gave the outside of the sub very little reflection of signals while acting as a giant sensor membrane for detecting everything from schools of fish to other submersibles.

"It left here two days ago. We popped it into one of the cargo pods in the *Super Queen* and delivered it to the Australian Navy yesterday. Say," Mr. Swift said snapping his fingers, "that reminds me that I am supposed to call their Admiralty offices tomorrow."

Tom grinned. "So, that would be today, here, at some point, right?"

His father nodded. "Right. Let me see... I will be calling to their Potts Point facility in Sydney and that is plus fifteen hours from us at this time of year. So, I need to call them at... six tonight!" He sat back. "I guess the old brain isn't doing too badly when it comes to mental math. That is the right time calculation, isn't it, Tom?"

Tom laughed. "Of course it is! But, I do have a question for you. Why did they choose to go that route instead of buying several of our *SeaSpears*?" The *SeaSpear* had originally been developed for a top secret British project, but now were actively being used by several countries to patrol their territorial waters. Whether used unmanned with an extended-use battery pack or manned, they were sleek, fast and could overcome or defeat anything they encountered underwater. Like Tom's air drones, *SeaSpears* used a variety of

countermeasures to overcome wayward or enemy craft.

“They want the subs to remain underwater for up to three weeks at a time and have enough room for the two pilots to stand up and stretch.”

At sixteen feet long and eleven feet high, the inside of Mr. Swift’s fish submarine was built on two levels. In the upper nose was the pilot’s position where he would lay steeply reclined and maneuver the craft. Directly below that was the sleeping position—shared by both occupants but one-at-a-time—and the aft, before the bulkhead that separated the power and drive room, was a floor-to-ceiling open space.

“They are going to test it for a week and then we will bring it back for any retrofitting necessary. And,” he looked at Tom, “I’m going to ask that you and Bud take it out for a one or two-day cruise to give your opinions as well.”

“Sure, Dad,” Tom told him, “I’ve got nothing on my plate for at least a couple of weeks. Just stuff Bash wants me to do around the new house. And, that evidently starts with repainting the living room. It’s not quite the right shade of eggshell, I guess.”

They both laughed. It was something Mr. Swift had gotten used to over the years and now Tom was finding out about.

The call to Australia did not go well. Once Damon identified himself and was transferred to Vice Admiral Sir Clive Digby-Collins the Navy man began the conversation with, “What the bloody hell do you think your at, Swift? We no sooner got that clumsy-looking contraption in the water than our men rode it straight to the bottom of the bay. What have you got to say about that?”

Damon looked over at Tom who was still in the office working at his own computer. Mr. Swift was using the speakerphone so Tom had heard everything.

“First, do I address you as Sir Clive or Vice Admiral?”

“What? Who gives a toss— oh... all right. Just call me Admiral. So what have you got to say?”

“For starters, I need to have you transmit the files from the sub’s data recorder. It is located in an ejectable buoy in case of emergencies. If your two men didn’t manually eject it, that recorder will still be in the tail section under a door marked ‘MDR.’ That’s for Mechanical Data Recorder. Do you have access to that, Admiral?”

The man on the other end of the call placed his hand over the receiver and both Tom and Damon could hear his yelling to get the attention of someone. He came back on a minute later. “I’ve just

sent my aide, Lieutenant Hodges, to go open that thing up. But while he's gone can you tell me what in the bloody hell possessed you to build that sub to look like a god-awful fish?"

In spite of the situation, Damon laughed. "Sir. That design came from your own Naval Purchasing Department. I have the specifications sitting in front of me and they not only include a detailed description, including spelling out that this is to look like a real sea creature such as a sunfish, they included a photograph of one to make certain we understood the request."

He offered to send an electronic version of the entire file, but the Admiral declined with an exasperated sigh.

"Okay. My man just ran in with something that looks like a pack of fags. That it?"

"Well, if you mean a pack of cigarettes, then yes. It is about that size and shape. If you will pull the rubber boot off one end it will expose a flip-out connector that should plug into your computer. Once it is attached a light will come on in the middle of the top panel of the recorder. Assuming it is green, press it and the data will be sent directly to me. If it is yellow, I'll need to have you do something else. If it is red, then you'll have to send the module to us."

"Well, it's green. Press it, you say?"

"Yes."

Two minutes later the entire download came through. Tom moved over to sit on his father's desk and they looked through the recorded data. Less than thirty seconds later Tom pointed at one of the lines.

"Uh, Admiral?" Mr. Swift said. "I can see exactly why the sub sank like it did. Whoever was inside did not seal the upper hatch. It is not automatic—as highlighted in the operator's guide—and shows no indication of being manually activated."

"Bloody hell!" the Admiral grouched. "Look. I'm sorry to have jumped on you like that. Let me do a rekkie into this whole fish thing and get back to you. In the meantime, can we continue testing? That is, assuming I can get the drongos to dry her up and clean everything."

"I'm guessing that drongos is not a term of endearment. But the answer is no. In order to make things as accessible as possible, and with the knowledge that we would be getting it back next week to make some changes, several panels were not included. The electronics are wet and you could have a fire."

He offered to have the cargo jet—still sitting at the Sydney airport—send over the trailer and to bring it back to the U.S. as soon as that day. The Admiral agreed and promised to have his Navy team read and re-read the manual several times in the coming week or more that it might take to put the sub back to rights.

“Drongos,” Mr. Swift chuckled. “You have to love their colorful language.”

When the new submarine arrived back at Fearing Island—the former scrub grass-covered island off the coast of Georgia that the Swifts leased for exclusive use as a rocket and submarine base—Tom had made plans to take Bud and Sandy along with Bashalli to turn the upcoming test days into a little fun. Of course, the girls would not be coming with Tom and Bud when they took the sub out, but Sandy had developed an interest in SCUBA diving and both she and her new sister-in-law had recently completed their open water dive certifications.

The waters around Fearing were teeming with sea life and a natural shelf just thirty feet down extended out more than three hundred feet all around, except for the dredged harbor, perfect for fish spotting and other activities.

While Tom flew the girls over in his Toad, Bud came along behind in one of Tom’s one-man helicopters, the *Wasp*. Featuring more of a flying disc than a set of blades overhead, it had been designed to provide the Navy and Coast Guard with a search and rescue helo that could be stowed in a folded position and had a longer range than current multi-crew helos.

Tom also planned to try out a new technique of swapping crewmen from the new sub while out at sea. It not only would mean the sub could go out on extended missions, it might even result in the sale of a few of the *Wasp* helicopters.

The four arrived in the middle of the afternoon and Tom immediately went off to inspect the sub.

After getting the ladies settled into their rooms—Bud had turned bright red when Bashalli reminded him that she no longer required a room of her own; she and Tom would be sleeping together—he joined Tom.

When he explained his near-gaffe, Tom laughed at him. “You do realize that Sandy is going to grab onto that in a death-like grip and remind you that you, too, could be single-rooming if you would just hurry up and propose and marry the girl?”

Bud nodded. He and Sandy had been dating for over four years,

more than Tom and Bashalli, and yet Bud had not “popped the question,” in spite of all of the hints and outright suggestions from Sandy for more than two years.

“I’m working on getting up the nerve, skipper. Really I am. So,” he said changing the subject, “what are you finding out with our little TunaSub here?”

He grinned at Tom. Bud’s ability to almost instantly give most of his friend’s inventions a nickname that stuck like glue was known all over Swift Enterprises and their sister facility, the old Swift Construction Company.

Tom groaned. “Is that all one word?”

“Yep. Even down to the capital S in sub!”

“But it doesn’t look like a tuna.” Tom argued.

“Ah, but give me the names of five people who know what a sunfish looks like,” he dared his friend.

Tom and Bud dug into the unorthodox submarine. It had already been fully drained and dried out with warm fans overnight, so they needed to pull every circuit board and instrument to check them.

By the time they had finished it was past dinner time. They climbed out of the sub only to find Sandy and Bashalli standing nearby, arms crossed and feet impatiently tapping.

“About time!” Sandy stated grumpily. “Do either of you have an idea how long we’ve been standing out here waiting for you to take us to dinner?” Her eyes were wide, her jaw set and she did not look happy.

“Five minutes?” Bud guessed.

Both girls broke down and began to laugh.

“Actually, it’s only about three, smart guy!” Sandy told them. Turning to Bashalli she said, “You know, Bashi, I really thought we could make them squirm this time. It’s not fair!”

Tom and Bud climbed down from the scaffolding and walked over to hug their respective ladies.

“Don’t worry, San,” Tom told her. “There are plenty of times you actually have waited for Bud and me in the past. Let’s go to the cafeteria and have that dinner.”

“Actually, Thomas,” Bashalli told him, “we have a small surprise for you. We will not be dining in the cafeteria tonight. Instead, Sandra and I have arranged for a special meal. Let us go

to the executive dining room.”

Curious, Tom and Bud took the girls’ hands and let them lead the way.

“Hello, hombres!” the booming voice of Chow Winkler greeted them as they entered the room. “The ladies here asked me ta come on over ta make ya all a real slap-up meal. Get those hands washed and have a sit.”

Chow and Tom first met when Damon Swift was constructing The Citadel in New Mexico. It was the same trip when Tom first met Bud. They had all hit it off so well that Chow had asked to be allowed to move to Shopton to become the Swift’s personal chef.

Known for such concoctions as Rattlesnake Soup and Cowboy Haggis, just about everything he ever cooked was delicious and something people requested at later dates.

Like all others, this meal was wonderful and the foursome left after hugs and handshakes and many thanks.

The next morning while Sandy and Bashalli headed back to the shallows, Tom and Bud lowered the TunaSub into the water and headed out for a sea trial. As Tom expected, it functioned amazingly well. By the time they returned six hours later he only had a short list of three items for his father to work on.

“As long as the Aussies follow the instructions, they ought to love this thing,” Bud assured Tom.

Tom and Bashalli headed in one direction and Bud and Sandy in the other after dinner that evening. It was a beautiful night for a long walk with a bright moon and many stars and constellations visible.

Two hours later as they headed back to their quarters, Bashalli told Tom, “If there is any way for us to just put all of your trips and voyages up to those stars to one side, I could see moving to a quiet place like this.” She knew how unlikely it would be for Tom to do that. At least in the foreseeable future, but it was something she wanted him to know.

Before heading home the following day, Tom took the TunaSub out about a half a mile while Bud climbed into the *Wasp*. Accompanying him was one of the base’s aircraft repair technicians. With only one seat inside, the tech, Johnson Speck, was strapped into the special rescue harness that was slung underneath.

As Tom moved the sub forward at a slow speed, Bud hovered overhead and lowered Johnson. The transfer was a little clumsy

but served to prove the possibility.

They all returned to the base and the four friends were winging back to Enterprises within the hour.

The alert came through from the Outpost in Space at the same moment Tom was preparing to leave for home the following day.

“Tom here,” he said.

“Tom. Ken Horton up at the Outpost. We just had a startling set of photos coming through from the Galileo III Deep Space Telescope on the Moon.”

“What are they showing, Ken? Is something coming at Earth?” Tom asked in a startled manner. After the previous experience with Pluto before it veered off of its near-collision course and into orbit between Jupiter and the asteroid belt, Tom was particularly conscious about what might be going on in the solar system

“No. Not that, thankfully. What they do show is a brand new black hole. It isn’t all that close to us and seems to have appeared sometime in just the past eighty days, between the previous sweep of that area of the galaxy and one in the last twenty hours.”

“Okaaaaayyyy,” Tom said slowly trying to come to some conclusion about how much of an ‘emergency’ this constituted. “I’ll assume that it is confirmed, so what is the problem?”

“The problem is, skipper, that even if it isn’t close, it is in our back yard so to speak. This black hole is little more than thirteen light years away.”

“Oh-oh!”

Tom knew that the news was not good. If this was, indeed, a traditional black hole it could be capable of drawing in matter from many light years all around it. How large and how dense the black star at its center would determine from how far it could draw that matter. In the celestial arena, thirteen light years could be an eternity, or it could be no distance at all.

And, given enough time it could pose a distinct danger to Earth and all life on the planet.

In other words, black holes make very bad neighbors!

CHAPTER 2 /

WHEN A LITTLE PEEK IS NOT AN OPTION

BY THE TIME Tom got to his small underground office and lab the next morning he discovered that the phones that always rang off the hook with calls from the insistent reporters and officials from both the U.S. Government and those of many foreign nations... were not ringing. In fact, according to Munford Trent, everyone had completely failed to try to contact him.

He called George Dilling, the Director of Communications at Enterprises. “Hey, George. Have you and your folks been screening my calls this morning?”

There was a brief pause, then, “And a good morning to you as well, Tom. I usually don’t like to play twenty questions so can you tell me what sort of calls you think we might have been keeping from you?”

Now, Tom was confused. It seemed that any time *anything* out of the ordinary happened, and especially when it occurred in outer space, just about the first place everyone called—and tended to blame for whatever they couldn’t understand—was Swift Enterprises and they generally demanded to speak with either Damon or Tom.

It was one of the bad parts of being in the public eye. Everyone felt they knew you and they all believed that they had a right to talk to you at just about any time and about any thing.

“Well,” began Tom slowly, “late yesterday afternoon I received, and it was routed through by your folks, a call from Ken up in the Outpost telling me that they’ve spotted something out in space. Something not very nice. But, I’m getting the sense that it hasn’t made the news yet. Hmmm? Strange. Well, if you begin getting panicked calls, you’ll want to have a non-committing statement to give. I’ll send one to you if you like.”

George replied, “If it has to do with the minute possibility, yet uncorroborated, of a reported phenomenon many light years distant, then I’ve got that covered. Your dad sent me the basics late last night. Oh, and go check with him on this but I believe that the proverbial lid has been clamped down over the top of this for now. Your dad spoke with the President of the United States at seven forty-five this morning and then let me know that we are to answer all questions with polite requests for any information and its source the caller might have that prompted them to inquire. If they refuse, then we refuse. It seems that our Commander in Chief

is a little bothered by what went on with the press and Pluto and all of the flack he and Enterprises both took on that, so he wants us to play dumb for now.”

“But, the Galileo III folks—”

“—have been instructed that they are having a communications problem that will last for at least the next twenty-four hours. Call your dad,” he repeated, cheerfully. With that, the line went dead.

Instead of calling, Tom headed over to the Administration building and the shared office.

“Is he busy?” Tom asked Munford Trent.

“Not right now. Go on in... he’s been waiting for you to get here.”

Tom opened the large, heavy door and walked in. “Hi, Dad. George told me a little about what’s happening but he says you’ll have the latest. What gives?”

As Tom sat down his father gave him the details about what he and the President had been able to discuss.

“So,” he concluded, “the President wants you to undertake a ‘rescue mission,’” and he made verbal finger-quotes, “ ‘to the Moon today to help the colonists and the Galileo III team with the total radio breakdown they’ve suffered.’ End quote.”

Tom looked at his father skeptically. “He believes that explanation will fly, huh?”

“The hope is that as long as nobody points to a spot in the sky and cries out, ‘Look at the black hole!’ that it could take weeks or months before any other observatory sees it. The thing is in a low-profile part of the outer galaxy that gets very little observation. Plus, right now it is very close to Saturn so visibility is bad, also making a random viewing unlikely. It was actually an accident that the Galileo III was pointed in that direction. They’d just completed a bit of maintenance and had it aimed down and almost to the lunar horizon. When they started back up and moved it, it had already registered a good image of that area.”

“And, they’re certain it is a black hole?”

“No. That’s another reason to not spread rumors and panic. We will get some fair to good scans of the area in about one hour when the Outpost is in the proper orientation. And, you’ve already got another Megascope in the *Challenger* so you can do a direct scan from space without having to deal with lunar horizontal distortion or looking through the uppermost layer of our atmosphere.”

Tom agreed to his father's plan of action. "I'll call Bash and let her know I'll be late for dinner." He made the call and was pleased that she understood. He sat back and contemplated how to handle the mission.

A half hour later he had moved back to his underground lab and was studying a spaceship design he first came up with more than a year earlier. Originally proposed as an unmanned ultra-fast ship capable of reaching Earth's closest neighbors in just under six years, he was now looking at it with an eye toward what it might take to turn it into a manned vessel.

He heard footsteps outside the door and glanced up in time to watch Bud poke his head inside. "Hey. Isn't that the *Star Rider*?" he asked. That had been the preliminary name Tom had given the ship. Bud's idea was that it should be known as the *Vacuum Surfer*, but that hadn't stuck.

"Yes. What with this recent spate of outer space phenomena happening—Pluto first and now whatever it is out there—I've been toying with finding a way to not only build her, but to make her get from point A to point B faster, and with a small crew."

"Neat! Count me in. When do we go? Oh, and what do you mean, 'whatever is out there now?'"

Tom couldn't help but smile. Bud was always willing and ready to do anything having to do with flight. "She's months away, flyboy. The keel hasn't even been laid. As for the 'now' issue—" and Tom gave his friend as much information as he had.

Bud simply nodded and shrugged. "Okay. It's too far out to visit. Let me know when we're ready to go."

Tom was a little surprised at Bud's lack of curiosity, but decided to ignore it for the time being. "What brings you down here?"

"Oh. Right. Sandy and I are going to dinner at Figaro's tomorrow. I just wanted to see if you and Bash wanted to join us."

Tom promised to ask his new wife once he got home.

"Want to pop up to the Outpost with me tonight?" Tom inquired.

"Nah. I'm about five minutes away from the truancy limits with your sister and promised her at least six continuous hours of uninterrupted adoration tonight. So, unless you really need me, I'd like to beg off, but *just this once!*"

Tom chuckled. "I understand. Wait until you two are living together. The guilt level jumps about five hundred percent."

Bud left the office a minute later, whistling an old rock tune.

* * * * *

Tom left for Fearing Island a few minutes later. He would pick up a small crew for the fast flight to the Outpost out there. "Please get the *Challenger* ready for a quick trip," he radioed ahead as his small jet soared up to flight altitude.

"Roger, Tom. How many men do you need?"

"Oh, I'm thinking just a second seat and one general technician. We're only going straight up and straight down. Thanks!"

Once they docked at the giant space wheel, only Tom transferred over. Within minutes of shedding his space suit and being greeted by Ken Horton, the Outpost's manager, Tom entered the spoke containing the large Megascopie Space Prober that was in now almost constant use by a series of paying-for-the-privilege astrophysicists and astronomers. In groups of eight they were shuttled up in the resupply rockets for a three day visit, each one getting two, two-hours sessions per day over a two-day period.

On arrival each group was given a Welcome and Outpost Rules lecture, then a six-hour rest period to recover from the flight and to acclimate to the low and zero gravity aspects of life on the giant wheel. The most recent group arrived two days earlier.

He was introduced to a serious man in his early sixties.

"Tom, this is Dr. Ron Reisberson. He's got the current two hour block on the prober but has graciously agreed to give up some of that time so you can take a look at out there. Oh, and he understands the secrecy involved in anything he overhears or sees."

"I have worked under direct security orders from everyone from university Deans to the President. Of the U.S., not the school," he added. "All I ask is that I be allowed to make up any lost time at some point before I return to the ground tomorrow evening. This is costing my department dearly, you know."

Tom assured the man that he not only would be given back the ten to fifteen minutes Tom believed he required, "But, we will also refund half of your charges, sir."

Totally satisfied, the astrophysicist stepped aside and motioned Tom into the operator's seat. They were joined by three of the Outpost's technicians who regularly assisted in operating the amazing deep space prober. He pulled his tablet computer out and

copied the coordinates into the controls.

“What star are you wishing to locate?” he doctor inquired.

“It’s designated Luyten’s Star, sir.”

“Ah, in delightful old Canis Minor,” the older man muttered. “A lot smaller and a less dense than our own Sun, and classified a red dwarf. An old favorite of mine.”

At the distances involved, aiming had to be precise to within one thousandth of a degree, so it required almost five minutes to get pointed at the exact spot he wanted to see.

But, no matter what he did over the next ten minutes, the monitor simply showed the star plus a clear view of the surrounding area and a murky blur in the middle of the screen. Thinking it might be caused by Saturn’s reflected light, or its rings, Tom had even moved the focal point so that it was as far to the opposite side as possible. It made no difference.

And, the more he looked at the image the more it became obvious that the blur was at its most severe in the direct center of the unknown object.

“Sorry, Tom, but the Megascopé just can’t get focused in on that anomaly,” the chief operator told him. “The way the device works just isn’t able to give us a reflected image. We can’t set the end point. It sort of disappears into nothingness.”

“Uh, Mr. Swift?” the doctor spoke up, “If I might venture a question? If you are attempting to focus on an object that is not allowing light or image reflection, could it be a black hole?”

Tom turned to look at the inquisitive man. He took a few seconds to size him up before replying cautiously, “From a purely theoretical sense, sir, that is a possibility. But, it is not one bearing repetition, if I might make a suggestion.”

Reisberson looked back at him and winked. “I must be mistaken in my assumption. After my turn at the prober I will have a lie down to rest. When you get to this age the mind begins to... wander.”

Reaching out, Tom warmly shook the man’s hand. “In that case, sir, may I offer you a return visit in a few weeks when you are, erm, feeling better able to handle a second, complementary visit?”

The astronomer beamed as he nodded. Tom slid out of the seat and Reisberson slid in, returning without further comments to his previous study of the heavens.

Tom considered his options. “Okay. Can we get the Galileo III hooked up to one of our SuperSight enhancement units?” he asked Ken.

“I’ll go check,” he answered and left the room.

Now it was Dr. Reiberson’s turn to consider a possibility. He spoke without looking up from the space prober’s screen. “I suppose that you might be able to take their digital feed from that fantastic scope of theirs and then use your computer Super camera to enhance the images. As long as the plug and socket match.” Tom’s SuperSight was well-known to the doctor. His university had purchased one, months earlier, and he often trained in onto the surface of the Moon.

“Oh, I’ll make them match,” Tom assured him.

After contacting the Galileo base, Tom had all the information he required to build the necessary cross-over cable. Neither the Outpost nor the ship had the necessary components so he opted to head back down to Fearing Island. It was well past midnight so Tom told the two crew members to get some rest. He built the crossover connector in less than ten minutes and then slid into bed for a quick nap.

He awoke five hours later, and with a new pair of crew members lifted off from Fearing in the *Challenger* shortly thereafter.

They landed at the normal one-mile distance from the observatory so that no lunar dust or regolith would be kicked up by the mighty repelatron. Enterprises had sold the observatory half a dozen of their old repelatron donkeys, and Tom hopped on one of those, but even that had to park three hundred yards away. He walked the rest of the way passing a series of five signs:

When walking on the Moon
|
Don't you kick up any dust
|
Or else you'll find yourself
|
Getting all yelled at and fussed
|
Burma Shave!...

He had a good laugh at that. It told him that at least somebody up here was possible a match for Bud Barclay in the jokester department.

Since it would have been difficult to haul one of the SuperSight enhancement systems to the observatory, Tom had constructed a transmitter and plug to take the telescope's digital output and transmit it back to the *Challenger* using a low-power laser.

"Can we give you any help, Mr. Swift?" one of the observatory's junior scientists inquired.

"Please call me Tom, and no. As long as I can get this emitter to a spot with a clear view of my ship, I'll be ready in three minutes."

The technician promised to set up the emitter in one of the view ports facing the ship.

When Tom announced his readiness, the observatory team went to work entering in all of the angle and range and azimuth numbers for the anomaly, in turn causing the superstructure of the telescope to move into alignment with the possible black hole.

One of the techs worked on a panel that controlled an arm that maneuvered all around the upper and then lower parts of the telescope.

As Tom questioned this, the woman on the panel smiled and explained. "Even with our warning signs you might be shocked at how much dust we end up settling on things. And, since the actual scope is outside, it needs a periodic cleaning. We keep enough nitrogen gas up here to spray it off, just like you might use compressed air to dust computer components."

Tom watched the un-enhanced picture on the large monitor in the telescope's control room. At first it appeared to show a distant star field along with a nearby solar system, but as the camera collected more and more of the thirteen year old light, he could make out the small darkness in the middle of the picture. It was so dark that it stood out against the relatively bright blackness of space. It was a bit blurry.

He felt a shiver run down his spine. Although he had seen photographs of large black holes thousands of light years away, he had never seen one close enough with the potential to one day engulf Earth's solar system.

"I have to get back to my ship to take a closer look at the video and maybe even go back to Enterprises to do some more work on the data, and I'll send back up whatever I get," Tom promised as

he got back into his space suit.

Before leaving he inquired, “How long do you believe your radio problems will continue?”

The base commander—the only military man assigned to the otherwise civilian operation—smile and replied, “Probably until we receive a personal message from the one man in a position to order that it is functional. My Commander in Chief.”

When Tom got back to the *Challenger*, Red Jones, who had accompanied Tom as co-pilot, greeted him with, “I was watching the monitor on the SuperSight, Tom. You need to come look at what it displayed.”

After sitting down at the control panel Tom called up the raw video from the telescope. It was exactly what he had seen over at the observatory. With a flick of a switch he activated the enhancement computers and replayed the video.

“Is that how it’s supposed to look?” Red asked.

Tom shook his head. “No.” He ran a self-diagnosis program on the system; it showed that the SuperSight was in perfect working order.

“Now I’m stumped!” Tom admitted, sitting back in his seat. “We got a picture from the optical telescope on Hawaii just before I left Enterprises, and it shows a distant and relatively small anomaly that seems to be a black hole. These Galileo folks have what looks like a small black hole, yet the space prober on the Outpost and this SuperSight enhancement of the telescope up here only show an indistinct and blurry image.” He reached out and tried to make several adjustments, but the results were identical.

They flew the *Challenger* one hundred thousand miles away to a point where Saturn’s light would be less noticeable, but their onboard Megascopes could provide them no better picture of the black anomaly.

“What now?”

Tom looked at the older pilot and shrugged. “Now, we go home and I try to come up with something that can make a diamond out of this pile of garbage!”

CHAPTER 3 /

A MAJOR DECISION IS MADE

BASHALLI LOOKED as if she hadn't slept while he was gone. She had decided to work from home that day but he could tell that her night must have been rough.

"It is just that in the weeks since we were married my body has gotten so accustomed to your being there to snuggle up against, and to warm my toes on, that it was well after four when I believe I drifted off," she told him. He scooped her in his arms and carried her down the hall to their bedroom and set her gently on the bed.

"You wait right here," he told her. "I'm going to make you a nice cup of herbal tea and then I'll sit here and read if you want to take a nap."

She nodded, her eyes half-closed.

When he came back to the room five minutes later, she was sprawled across the bed diagonally and was ever so softly snoring. He smiled, set her cup on the bedside table, covered her lightly with a fleece blanket, and tip-toed out.

Bashalli slept for almost nine hours and even Tom drifted off for a solid three-hour nap sitting in the easy chair in their living room. He also called Bud and cancelled the dinner date for that evening.

"Well, it's okay by me but you'll have to either have a note from your manager, or you gotta speak to my boss. SANDY!" he yelled out. "It's that brother of yours!"

"This had better be good, Tomonomo," she told him. "It's bad enough trying to get Budworth here to take me out alone these days. Plus, if I am to convince him to ask for my hand I need Bashi's support. So, what's the story?"

Tom told her.

"Oh. Yeah, I can see that. Is she okay?" her voice turned from mock sternness to concern.

"Yes. She's just worn out from not sleeping. I'm thinking the next time Bud and I need to head somewhere for a couple of days, you might want to come over and stay with her."

"Fine. Just leave the credit cards on the front table and I'll find something to occupy her time with."

The next morning both Tom and Bashalli felt one hundred

percent better, so Tom kissed her as she got into her car, and they drove off in different directions for work.

Bud was waiting in his underground lab and office. “I just dropped by to thank you, skipper. Not sure what you said to your sister, but she just sort of cuddled up next to me on the couch and we watched movies until she had to head home.”

Tom told him about Bashalli’s sleepless night.

“Ah. Well, whatever it was, I just want you to know that your sister is pretty near to being requested to be Mrs. Budworth Barclay! Now that she doesn’t have early curfew and can hang out at my place until midnight, it was just amazingly relaxing to sit with her, hold her and even get in a few smooches. It just felt right. Is that what had you finally asking Bash?”

Tom smiled. “No. It all happened the day you and San and I went on the sail down Lake Carlopa and she couldn’t be there. I realized that there was a gigantic hole in my life that she fills, and not having her with me felt terrible. I told her about it that night when we had a little dinner at Herd of Chickens. Her eyes brimmed up with tears and I just knew she felt the same way. So, I asked her to marry me and she couldn’t nod fast enough. Couldn’t even get out a ‘Yes’ for a couple minutes.”

“So, if I’ve hit that point...?”

Tom shrugged. “Do whatever it takes to become my brother-in-law would be my suggestion. And, Sandy’s dream.”

Now, Bud shivered. “Just that, huh?”

“Hey. The side benefit is that at the wedding you get to kiss lots of women in the receiving line.”

Without another word, Bud got up, walked around to Tom and planted a kiss on top of the inventor’s head and left the office.

* * * * *

“Glad to hear your voice, skipper. It’s been... what? All of fifteen minutes? What’s up?”

“Well, Bud, I’ll tell you. After you left my lab I received a phone call from the Keck Observatory out in Hawaii. They have taken the lead, as far as North America is concerned, with trying to get as much visual information about that anomaly as possible. The only problem is that as of yesterday, the outer rings of Saturn have entered the frame area of even the tightest shot they can try for.”

“So they get a really nice close up of those beauties? What’s the —” Bud stopped. “Right. I see. Beautiful reflections of sunlight and

what's bouncing up off the planet, and that's not giving them a clear look at our little friend out there."

Tom chuckled. "I am so glad to hear how you are coming along in your studies, Mr. Barclay. One day soon you may not even need to pause to think about the obvious," Tom chided him. "They have asked if we might be able to head into orbit and pick up the old Hubble telescope and take it out past Saturn, or even put it in some sort of giant orbit that won't be interfered with for many, many years. I've told them it is possible, but wondered about its condition. It was deactivated and placed in hibernation mode a decade or more ago."

He went on to explain that at least three scientists would accompany them along with a team of two technicians who would be performing some repair, tuning and resupplying of the old Hubble.

"Wait. Why not just take up a space probe. Why haul along that relic. Can't you figure out some sort of solar panels and auto-aim thing?"

"Yeah, but we don't have the time to build anything like that, *we* can't remain out there for months, and the astronomical world is screaming for access to everything that can see that far, so dad suggested that we do what we've been asked and help pick up and recycle an old piece of what's become very expensive space debris."

It took five days to get the team together and outfit the *Sutter* with a forward module capable of bringing the telescope on board, cradling it, and giving the technicians room and access to work on all portions of the device.

Tom recognized the astronomers by name and the technicians by name and reputation. Both men had been on multiple Space Shuttle missions to the Hubble years earlier and had performed a combined eleven space walks and repair session on the old workhorse.

"Very please to have you on board, General Dickerson," Tom greeted the senior former astronaut. "And you as well, Admiral Cooper. I have to say it is a honor to have two of NASAs most well traveled astronauts coming along to help on this trip."

Both men, now in their late fifties, laughed as they shook Tom and Bud's hands. Bud, speechless as he tried to come to grips with being face-to-face with two of his flight heroes, could only grin and nod.

"Actually, Tom, and you too, Bud, we're tickled absolutely pink

to get the chance to come with you. Not just to get out hands back on old Hubble, but to go back into space one more time. Oh, and dispense with the honorifics. They were retirement gifts. We're Tony and Rob."

On the flight to Fearing Island Tom explained that they would be shuttling up to the outpost in space in *Challenger*. "The *Sutter* is parked up there. We'll drop down to the lower orbit and pack up the telescope before heading to a new orbital position we've worked out. It's about thirty degrees retro to Saturn's orbit and eleven million miles farther out."

Rob Cooper frowned. "Is that a sort of Lagrange point?" he asked referring to certain points near and around planets where an object would be so equally affected by various gravitational fields that it would remain exactly where placed.

"It is," Tom confirmed.

It took just a half hour from the time they landed until *Challenger* rose from its special landing pad across from the main rocket field.

As they approached the Outpost Bud did a double take looking at the *Sutter*. "Uh, skipper? Am I seeing things?"

Tom chuckled, knowing what his friend was asking about, but he decided to pretend ignorance. "Why, no, Bud. Or, at least, I don't know. What are you talking about?"

Bud groaned. "You know darned well what I'm talking about, Tom Swift. That!" He was pointing at the sail-like superstructure of the golden spaceship. "You've moved the front window!"

Tom glanced at the area in question. The giant panoramic window that made up the entire front of the control room was now facing to the back of the craft.

"Well, not exactly. You see, after our fast trip to Pluto a few months ago I realized that everything is fine during the acceleration part of the trip, but once we start slowing down we either have to rotate the entire ship so we are back to wherever we're going, spin the acceleration couches back to front which makes controlling the ship a bit tricky, or do what I actually did. And, that's to make the crew part of the ship swivel around. The ship keeps traveling in one direction but for comfort we all have our backs to the direction of travel."

He made the final course correction and brought the *Challenger* to a standstill.

"Neat! That means we just snuggle into those comfy seats and

don't get thrown forward against the straps. Right?"

Tom nodded.

"Uh, I don't want to sound like a schoolboy, but I have no idea what you two are talking about," admitted Tony Dickerson.

As Tom shut down the instruments he explained. "We built the *Sutter* when Pluto did its little disappearing act. She was originally outfitted with a mining module up in the forward forty percent of the main hull and plasma jet engines and fuel taking up the back sixty. She's made eleven runs out the Pluto's new location and has been bringing back some amazing ores and metals. Right now, however, the mining module is under repair. That's it just peeking up from behind *Sutter*." He pointed at a conical assembly of tanks and refining equipment.

"Ah. So we'll... oh. I'm not sure what we'll do," Tony told him.

Tom described the newly installed carrier module the *Sutter* now held. The forward module was opened at the front to bring in and launch the Hubble, but would be sealed once the old telescope was inside and provide a safe haven for all work to be accomplished.

"Suited, or free breathing?" Rob inquired.

"Everyone inside will need to wear pressure suits, but we can dispense with the thick ones you both used to climb into. Come on down the to hangar deck and we'll get you into some SwiftSuits."

After having experienced the two-hour long process of struggling into one of NASA's spacesuits on many occasions, both astronauts were left in stunned amazement at the ten-minute process of putting on one of the suits they were provided.

"And, next time, now that you've got the hang of it, you'll be able to get into one on your own in under three minutes!" Bud exclaimed.

"I hate to ask this, but how long have you had suits like these?" asked Rob.

Tom grinned through his open visor. "About a year. The older ones were a bit bulkier."

"Yeah," Bud piped in. "Those took almost six minutes to get into!"

Rob and Tony groaned.

"Well," Tony stated, "at least we get one more chance to go outside. Heck, I'd even do it in one of the old suits!"

In their years of service to NASA, neither astronaut had been any higher than about 380 miles above the Earth's surface. It was very close to the far limits of the shuttles. Now, floating across the void at 22,300 miles they found themselves more amazed than they had been even on their first trips into space.

Tom let them pause for five minutes outside so they could admire the view. Then, they all went inside one of the closest airlocks and removed their suits.

"Say, Tom," began Rob, "why aren't we floating around up here? Have you cracked the gravity thing?"

"No. That body suit you've got on contains a lot of special fibers that are pushed against by those little gravitron emitters in the ceiling. It all gives apparent gravity at whatever setting we wish to use. Without those we'd all be floating."

"Gravitron?" questioned Tony Dickerson.

"Yeah," Tom admitted. "I have my repelatrions that push things like spaceships. And those are a special purpose offshoot. It's kind of a weak name but at least it gets the point across."

"Hey, buckaroos!" Chow Winkler's voice boomed out across the central hub's open area as then entered the large room. "I hear yer headin' out in ole *Sutter*. Gimme a few minutes and I'll get my food boxes together. Cain't have you goin' out with no good grub" He smiled hopefully at Tom.

Unable to resist the older man's eagerness, Tom told him, "We're heading back over in twenty minutes. I hope that's enough time. Can you pack her up for about a nine week trip?"

"Heck, Son. I got her mostly packed already. I'm just headin' to the galley to pick up my cookin' you-tensils." With that, he headed toward one of the nearby spokes.

After a short visit and tour of the Outpost, Tom had them suit up again. "We'll head over to *Sutter* and get her warmed up. Then Bud'll give you the grand tour and we'll head back down to pick up our precious cargo."

Good to his word, in an hour the crew, now at the full compliment of twelve, strapped in and Tom nudged the *Sutter* away from the Outpost. Once clear his hands fairly flew over the controls as he located and used their repelatrions against parts of both the Moon and the Earth to rotate the ship so that he could send it downward.

"This is spooky!" declared Tony Dickerson. "When the shuttle heads in we're always nose up. Having the globe coming up right

into the window is a little disconcerting.” He and Rob had been asked to join Tom and Bud in the control cabin for the short flight down to pick up the telescope.

Bud turned around to face their seats and grinned. “Pretty neat, though. Isn’t it?”

They both nodded enthusiastically.

All too soon, the *Sutter* slowed, using the Earth to push against, and then maneuvered into a matching orbit just fifty feet from the shiny telescope satellite.

“Hey, honey. We’re home,” whispered Tony.

“Yeah,” Rob agreed, in an equally reverent tone.

Along with two other Enterprises technicians, the astronauts suited up and headed down to the forward module. Once in position, they called up to Tom. “We’re ready for her. The nose is open and the cradle is empty and waiting.”

With almost surgical precision, Tom eased the *Sutter* forward. In about five minutes the distance had decreased to just three feet. Bud, now down in the nose, called up minute steering directions and Tom performed them so that the Hubble was soon exactly centered in the twenty-foot wide, open hole. Then, with barely a microburst of repelatron energy—part aimed at the Moon and part at little Nestria—the *Sutter* seemingly swallowed the front two feet of the telescope.

“We’ve got her in hand,” called out Tony.

Tom knew he meant that they had physical contact with the giant tube. The next operation would be to manually retract the solar panel on the right side. When it had been decommissioned, there was enough power to unstick and draw in the left one, but the right one had proven to be too much and was left partially open. Now, sticking out only about three meters, it needed to be stowed so the telescope would fit in its carrying cradle.

The same went for the high gain antenna mast, but it could easily be pushed down. It was simply a series of tubes with a compressed spring. Once in orbit a small pin had been pulled by a servo and it had popped into position.

It took several men to manage things but Hubble was reconfigured for travel and strapped down in less than two hours.

By the time everyone met in the large open room Bud had named The Expanse, Tom already had closed the nose and had set the ship heading slowly out of orbit. The autopilot would steer them clear of several close encounters with space debris and other

satellites while they all enjoyed a beverage and discussed the state of the telescope.

“She’s in incredible shape outside,” Tony declared. “I spotted two micro holes in that extended solar panel but I know one of them was there on my last EVA to her.”

Tom outlined the rest of their trip. Before long, everyone knew that the maneuvering repeltrons used up until now would be stowed and the powerful plasma engines ignited once they reached about half way to the Moon, in a little more than three hours.

Right on schedule, Tom called through the ship. “Ten seconds until we accelerate. Make certain you’re strapped in and your couches are set on button three. Three... two... and...”

Everyone was shoved back into their couches. For the experienced Tony and Rob, it was less like a shuttle take off and more like a fast commercial jet roaring down a runway.

As per the schedule demanded by Doc Simpson, they accelerated at a constant 1.25-G rate for six hours and then reduced it back to 1-G for a one-hour “recovery” period.

Seventeen days later the turn-around point was reached. Instead of the original method of spinning the ship around, Tom now extended the plasma engines out and away from the main hull rotating them until they were pointing nearly straight ahead. The upper crew area in the “sail” rotated until it was facing to the rear of the ship and the engines fired up.

They would decelerate at the same rate as their acceleration and would arrive at their destination seventeen days later.

Twice a day the ship went into glide mode for five hours, it was during several of these periods over the first nine days that Tony and Rob, and the Enterprises techs, opened, assessed and repaired numerous systems within the telescope. Gyroscopes, some of Hubble’s more frequently-replaced items, were swapped out, an enhanced computer system installed, a pair of auxiliary fuel tanks added to the outside of the case and the solar panels upgraded to ones almost twice as large and five times more efficient.

They also used these periods to enjoy Chow’s cooking. Much to the amusement and amazement of the two NASA men, Chow seemed to have no problems with the periods of high acceleration. When not under acceleration, he could float around in the zero-G areas of the ship better than they managed to. Plus, they immediately recognized what an incredible chef he was.

While they worked on the inner mechanisms, Tom and another tech completely overhauled the transmitter and receiver equipment. By the time they were finished, Hubble could “talk” and “listen” at eight times its previous rate.

Bud worked with two more of the crew to pull out the entire battery storage pack and replace it with a set of experimental ones Damon Swift had begun constructing from the vanadium and rhenium Tom had recovered from the planet Pluto. Capable of holding and delivering a charge much longer than the eponymous Swift Solar Batteries, they would also allow the new, larger solar panels to keep them charged even with the reduced sunlight out past Saturn.

With everything finished before they even reached the turnaround point, Tom had begun insisting that everyone take advantage of the “rest” periods to the fullest.

On arrival, Tom and one of the astrophysicists made numerous measurements and finally eased the *Sutter* into the proper position.

Rob and Tony were the only people needed to relaunch the Hubble, and they suited up and went down to the cradle while Tom opened the nose.

Both men said a few words, patted the newly polished outer case affectionately, and then eased it up a few inches. The cradle folded down and away as they gently gave the case a little nudge forward. It required an hour to get it to the opening, but nobody wanted to hurry. The telescope could have no extra movement once it was released or it might not remain in proper position.

Tom carefully backed the *Sutter* away and closed the nose.

The Hubble was now in its new home.

Once Tony and Rob came back up to the control room, he sent the activate signal and was rewarded with having the high-gain antenna pop out to its full length, the protective cover over the lens open, and the two solar panels swinging up and out quickly rotating to catch the Sun’s weak rays.

They stayed around performing all the necessary systems checks, but five hours later it was obvious that the telescope was ready and able to work all on its own.

Sutter headed for home.

CHAPTER 4 /

TOP SPEED (PLUS A BIT)

WITHIN THE FIRST three days of operation it became clear that the repositioned Hubble was now capable of obtaining incredible pictures, even greater than when it had been in Earth orbit. To hide the actual intent for the reconditioning and the move it was decided to aim the telescope into deep space for the first two days—at least for eight to ten hours each—to get new views of distant solar systems.

With several hundred potential receiving stations around the globe, it was necessary to allow some harmless data to be intercepted.

Then, during the off time that was explained as “calibration periods,” it was turned out to peer the thirteen light years at the anomaly. This data was so highly encoded that estimates told them there was no computer setup in the world that could decipher it in fewer than two years.

“Well, Son, it might have been a great thing you did to get the Hubble back up and running, at least for mankind’s sake, but it seems to be a bit of a bust on looking at the possible black hole. Have you seen these?” he asked, handing Tom a small stack of crystal clear photos. The first showed an unsurpassed view of the binary Alpha Centauri A and B stars as the second, slightly smaller star, traversed in front of the second.

Tom looked at the next three photos of the actual target system with growing disappointment. “Great view of the star in that system, Luyten’s, but that extra light year beyond and to the right where the black hole is supposed to be... it’s all a blur. Rats!”

“Given that it is relatively in the opposite direction from our own galaxy’s center, I would have to believe that this isn’t caused by too much background or surrounding light.”

“Maybe, except that Canis Minor is a light year farther out. But if you look you can see that the brightest star cluster is not behind the black hole, it’s up and to the far right in this shot.”

Damon took the offered photo from Tom’s hand. “So it is. Hmm? I can’t think of any way to get a closer look, at least not until you finally build that ultra-fast ship you’ve been talking about. How long would that take to get out there?”

Tom softly snorted. “Well, about six years to Alpha Proxima and that’s only about thirty percent of the way to Luyten’s Star.

Even if we could carry enough fuel to remain under power for more than a full year, like I hope my idea for a pulsed plasma jet might get us, the trip to the black hole would still take at least seventeen years.”

“And, who knows what might happen between now and then,” Damon said rubbing his jaw in thought. He looked seriously at Tom. “It might be to our advantage if you were to spend some serious time perfecting your design and even building and testing that pulsed plasma drive.” He raised one eyebrow and nodded.

It was a point not to be missed. To Tom, it meant that his father was giving him permission to spend both time and a reasonable amount of company money. Later, Mr. Swift would rattle a few doors in Washington D.C. to get some Government funding.

As Damon turned to go back to the project notes he had been compiling, he thought, *It's only a matter of time before politician's begin to feel the panic rise and the money will suddenly be available. I hate taking advantage of the situation, but they just never listen until they get put under public pressure.* Outwardly, he sighed.

Tom decided to not inquire what the sigh might signify.

That evening Tom and Bashalli took Bud and Sandy out to dinner in Oswego. A restaurant they had all visited before in the city's tallest building, the Tishimingo Tower, was celebrating the hire of a new chef. Invitations to key citizens of Oswego and dignitaries from as far away as Albany had been sent along with a letter promising an incredible dining experience.

As they flew westward in the Toad, Bud and Tom chatted up front while the ladies whispered and plotted back in the last pair of seats. Periodically, Bud turned around only to have them cover their mouths and for Sandy to make a shooing motion to him.

“Do you think I'm going to get out of this alive, skipper?” Bud joked, but quietly enough so the girls couldn't hear. “If I'm trapped or injured, you save yourself and go on without me!” That caused them to both laugh and *that* earned them both a stare from Sandy and the demand, “You two had better not be trying to come up with a plan to embarrass us tonight!”

“As if we would do something like that,” Bud replied innocently, turning around and batting his eyelashes at them.

“Innocent and seductive doesn't become you, ya lug!” Sandy told him, but quickly started giggling. It took away a lot of the effect. Trying to recover any advantage, she changed the subject

quickly. “Will we have time to drop by Jon Wolfe’s store? I’d love to find a nice pair of slingbacks. Besides, he said that if we’re ever in town—”

“He is going to be very busy, Sandy. In case you don’t remember, Jon owns the restaurant.”

Sandy and Bashalli had met the entrepreneur and hydroplane boat racer a couple years earlier when he helped protect them from a man who had been following them. He turned out to be the owner and manager of the store they had been wanting to go to and offered them a substantial discount any time they came to town.

He also had worked with Tom providing insight into the turbine dynamics the inventor needed for his QuietTurbine jet engine. Tom returned the favor by providing Jon with a new computer and water baffle system to give his boat superior handling.

“At least he isn’t off racing in that boat you helped with,” Sandy groused.

Bud asked, “Did anything come of that system you cooked up for him?”

“Yes,” Tom replied. “In fact several of his fellow racers offered us huge sums to do everything from giving them exclusive rights to disabling Jon’s system.”

Now, Bud grinned. “Yeah. I remember now. Wasn’t there that Sheik who offered you his daughter in trade?”

A shocked gasp came from two mouths behind the boys.

“That’s not entirely accurate and you know it!” Tom chided his friend. “Ladies, have no fear. The head of a tiny landlocked sheikdom offered me one of his *minor* wives in return for exclusive European and Middle East rights. I turned him down.”

As they were being seated, their host spotted them as he scanned the dining room. He approached the table with a big smile. Shaking the boys’ hands and kissing both of the girls he told them, “I am so glad you could make it tonight. Antoine is originally from Boise, Idaho, but he is pure Cordon Bleu trained. An amazing talent. I had to offer him better than Manhattan wages and a small piece of the ownership to get him here, but just you wait. You’ll know it was worth it!”

He left them to order suggesting that their meal was already paid for. Tom tried to object, but Jon simply shook his head and mouthed the word, “No.”

As the foursome sat enjoying a dessert of fresh figs poached in port wine and served over handmade vanilla ice cream with salted caramel swirled throughout and tiny flecks of gold leaf, Sandy admitted that it all beat a pair of shoes seven ways from Sunday.

It wasn't until they were heading back to the small airport that the mood was broken. As their taxi left the Tishimingo Tower block, a dark sedan pulled along side. The back window rolled down and Tom looked over in horror as a tattooed arm came out holding a gun.

"BRAKES!" he yelled, causing the driver to slam his foot down and the car to swerve to the side. It swerved so hard that it hit the rear corner of the sedan, causing it to spin around and slam into a parked minivan. Smoke began curling from under the sedan's hood.

"Get us out of here!" Tom shouted. The driver didn't wait to hear if Tom had any other orders. He bolted from the taxi, leaving the four shaken and alone. Bud, who had been sitting up front, slid over to the left, restarted the car and, with squealing tires, drove them away as fast as the taxi could go.

Tom made a phone call to 9-1-1 and Sandy made another to Harlan Ames. The emergency services operator told him to stay with the other car in case the police needed information or identification, but Harlan ordered Sandy, "Get to the airport and get the hell out of there. I'll deal with the locals on this!"

It was a quiet flight home with Bashalli sitting up front with Tom, barely letting him use his right arm as she clung to it, and Bud sat holding onto Sandy in the row behind them.

Harlan met them at The Barn as Tom parked the aircraft.

"The locals understand about your departure. They got one of the punks in the other car. He was unconscious and is in a coma in the hospital right now. Have you ever seen any of those guys before?" Seeing the stress the ladies were under, he suggested that one of his men take them to Damon and Anne Swift's home. Tom told Bud to go with them as well.

"I can give Harl as much information as any of us," he insisted. Once they drove off, he and the Security man began walking. Tom told him of the fast appearance of the sedan. "It was like they had been tipped off we were leaving. The whole thing happened just about three blocks away and all within no more than five seconds."

He described the tattooed arm and gave a good account of the action. Satisfied, Harlan drove Tom to his parent's home.

“That area of Oswego has a pretty bad CCTV system. A few scattered cameras but I’m not counting on them getting anything. We’ll see.”

Sleeping arrangements were made with Bud taking Tom’s old room and double bed, and Tom and Bashalli getting the queen size bed in the guest room. None of them slept very well. Mr. Swift called Bashalli’s employer and explained the situation.

Her manager was horrified and insisted that Bashalli take at least one day off. “Tell her to take a couple if she needs it. She’s so far ahead of her workload right now that it will be no problem at all.”

When he went off to work, Anne made breakfast for the two couples. She knew better than to try to make small talk so she let them talk about anything they wished.

Everyone took a nap in the afternoon and Tom and Bashalli left around five. Bud said he would stay another night if Sandy wanted it. Her head bobbed up and down like a little spring-mounted bobble head toy.

The following morning Bud found Tom at work by eight. He hadn’t had a very good second night as Sandy snuck down the hall and climbed into bed with him around midnight. She held onto him and alternately shivered and snored until he eased her up and out of the room at four.

“You look horrible,” Tom said.

“I feel both amazing and horrible.” He explained the midnight visit. “She was so close, Tom and she smelled like heaven. It just seemed right that she was there, but I kept imagining your father kicking the door in, shotgun in hand, demanding to know what I was doing with his daughter!” He chuckled. “So, what’s new today? You working on the whole ‘how do we get there faster than light’ thing? Isn’t that supposed to be impossible?”

“Years ago Einstein postulated that nothing may travel faster than the universal constant, the speed of light,” Tom explained. “Of course, that only held up for so many decades before science caught up with the theory.”

“What happened then?” Bud inquired.

“Well, once science had the necessary equipment, including particle accelerators and computers fast enough to keep up with everything, we all discovered that there are some things that often seem as if they can travel faster.”

A light seemed to go on in Bud’s eyes. “Oh, yeah! Now I

remember. Neutrons or something like that. Right?"

"Neutrinos, actually, but close enough. Anyway, since then a lot of scientists and engineers have been struggling to see just how fast neutrinos can travel, whether they are the only thing—or at least the only thing we can currently measure—and whether mankind can tap into that speed. If we can, then a universe of amazing discoveries awaits us!"

"Let's go!" Bud exclaimed, rubbing his hands together.

"Hold on, flyboy. There's a lot more to it. The really huge breakthrough came when they wrapped up the experiment. Rather than a few neutrinos they tried the same experiments using bundles of millions of neutrinos at one time."

Bud held up a finger to stop the young inventor. "So..." he slowly said, "the first experiments were measurements of just a couple things so small that you can't actually see them, so they upped everything to... how big again?"

"Several million neutrinos. About the size of the point of a pin." Bud looked astonished, but let Tom continue. "Anyway, when they finished tallying up the results they noticed that more than seventy percent of the neutrinos had disappeared. Not exploded and not changed; disappeared!"

"What happened?"

"The theory was that they had surpassed the speed of light. Even though practically everybody except for science fiction authors believes that light travels at the top speed, some began seeing this as proof that there is a top speed, and a little bit more in certain circumstances."

"Didn't that get disproved?"

"For the most part. Experiment after experiment failed to recreate this potential plus-speed until it was declared to be unprovable. The thing is, some scientists, like dad, think something else actually occurred. They believe the neutrinos might have disappeared into a microscopic and microsecond long tear between dimensions. Dad has since changed his mind and I agree with his new theory."

"Being?"

"That since they couldn't recreate a dimensional opening, it must have been some other opening. A wormhole!"

Bud looked askance at Tom. He had heard of wormholes, and had seen several television programs about them, but had always believed them to be made up. "I thought that was *Star Trek* stuff,"

he said.

Tom laughed. “Yeah, those writers used the concept, perhaps a bit to literally, to give them an easy out for explaining how they traveled from one place to another instantaneously. Real wormholes, if they actually exist, might do a lot of that, or they might be just spacial quicksand. Find one, step on it and sink. Nobody knows.”

“Okay, but what does that genius mind of yours believe?”

Tom’s lips pursed and then relaxed them. “I’m not one-hundred percent sure, Bud, to tell you the truth. I’d like to figure out how to find one and then take a little peek inside some day. If they do work like shortcuts between locations it would sure make exploring beyond our little solar system a lot easier.”

Bud could see the far away look in Tom’s eyes and was about to leave when the inventor spoke up.

“If we didn’t have this anomaly that might or might not be a black hole to try to figure out I just might see what can be done to prove wormholes exist. Maybe some day.” He sighed as Bud excused himself and left.

It wasn’t until after the next weekend that Bud had the opportunity to visit Tom again. He had been making a delivery of the now Limited Edition *Pigeon Specials* to a buyers club in Canada. The old favorite single-engine plane was being phased out with a final run of just one hundred aircraft. This trip had reduced that to eighty available.

Tom was sitting at the computer station in his large lab in the Administration building, working intently on a CAD design for his interstellar ship.

“Is that a new ship? Can she get us to that black hole?”

“Perhaps.” The inventor explained how he hoped to use it to explore possible wormhole travel.

Almost as if picking up a previous conversation, Bud stated, “Okay, Tom. In all seriousness, I’m going to ask this to show you my incredible lack of understanding about what the heck you just said. You’re convinced that it is possible to travel faster than the speed of light just by going into a wormhole. Right?”

Tom nodded. “So far, you’ve got it. Go on.”

“Hmmp. Okay. Here’s the bit where my ignorance will really shine. Didn’t I read something a few years ago by Stephen Hawking that said he was certain that there were hundreds or thousands or even millions of wormholes in our galaxy, but that

they were something like a fraction of an inch wide?”

“Actually he believes, as do dad and I, that there are many, many billions of them. The thing is that they are smaller than you think. Try some as small as a billionth of a millimeter.”

Bud stood back up and swung Tom’s chair around so he could look into the inventor’s eyes.

“I remember that movie, *Fantastic Voyage*, and I really don’t want to get shrunk down small enough to drive a teeny, tiny spaceship into one of those.”

Tom laughed out loud. “Gee, Bud, I thought if we could get Sandy to dress up in a tight wetsuit like that actress did, that you’d sign on in a flash! Hey... seriously, I don’t anticipate it being anything like that. For starters, there is no shrink-Bud ray. Second, dad and I had been in contact with Professor Hawking over in England over the years and he believed that there may be as many as a few thousand right in our solar system.”

“Jetz!” Bud exclaimed. “Isn’t that dangerous?”

“No. Wormholes are not like black holes. They aren’t super dense occurrences that have such high gravity density they pull things into them. Wormholes could be pinpoint openings between one spot and another.”

Bud’s face contorted in deep thought. Finally he asked, “So, if you want to get from, say, Earth to Alpha Centauri you just find the express hole between them and off you go?”

Shaking his head, Tom replied, “It isn’t as easy as that and possibly not as hard either. Here’s what I mean. Let’s say that we devise a way to locate a wormhole—one of the large ones. The theory is that they do bridge between two locations, with an opening at both ends, but I’m almost certain that you can get out at any point. They are quantum phenomena that can be manipulated using quantum mechanics and great discharges of energy.”

He could see that Bud was looking a bit swamped in theory, so he tried to simplify things.

“Here’s the bare bones explanation. If they work like I think, picture one of those plastic-covered coil tunnels dog trainers use. Got that? Fine. Those have opening at both ends. We may be able to get down and push our way into one end and from inside determine just how long the tunnel extends. Your smile tells me you’re with me, so here’s the tricky part. If we know the wormhole we’re in is, say, a light year long, and we also know that we only need to travel half that distance, all we need to do is have some

way to get half way down the wormhole, which should be near our intended destination, and then cut a gap that we can slip out of.”

“So, there you are? That easy?”

“Well, in theory only. The three top problems are locating the right wormhole, getting inside, and then being able to tell how far you want to go. The fourth issue is what if wormholes don’t go straight from one point to the next? Can you ever figure out where to get out and be where you wanted to go?”

Bud was nodding but there was a big question on his mind. “Okay... let’s say you find the hole and stretch it open and get inside. Would you get crushed when it all closes back down to normal size?”

“It is tricky and will require some testing, but dad and I believe that there are no definite dimensions inside wormholes other than their length. You get inside and it is as big as you need it to be, possibly infinitely so around you, just finite front to back. Of course, if that’s the case then it will be impossible to find the side of the tunnel and get out early.”

“How do we get in?”

“We? Are you already planning a manned voyage into one, flyboy?” Tom asked teasingly.

“Well, I figure that once you prove something can survive in one that you’ll plan a trip for us. Tell me I’m wrong,” he challenged.

“I can’t. You’re right... if I can prove that travel is possible and safe, I’ll want do go in and try it myself. But,” he said turning serious, “it might be a one-man flight at first.”

“Okay,” Bud told him. “If you don’t want to come along...”

“Hey! I was talking about me.”

“Right, and I was talking about that thing we’ve discussed time and again where you are *not* the test pilot, I am. You are *not* expendable, and technically, I am. So, how do you plan on using one of the express lanes on the worm super highway?”

Over the next half hour Tom described several possible methods. These included ways to find a wormhole in the first place, methods of determining the direction it traveled, and ways to open the entrance.

“If we find one I would shove in a nanometer-thin glass fiber probe attached to a camera outside to have a look inside and hopefully to check its direction of travel. We are all pretty certain

they do not snake around wildly—perhaps merely curved—and that the term ‘wormhole’ isn’t very accurate. They may even go in a fairly straight line. If that’s true, the probe will tell us the direction of travel. Getting in is going to depend on what we find when we get in front of one. But, if I had to hazard a guess I’d say that an enormous energy field is going to be required. It needs to act like a shoe horn moving the sides of the hole out and away letting us slip right in.”

“And, we get out...?”

“My favorite theory is that once in all you need to do is push at the far end and it lets you out. It’s the getting in that will take all the energy we can muster.”

CHAPTER 5 /

A WORMHOLE FREEWAY?

TOM AND BUD invited the two girls to accompany them on a one-day trip out to The Citadel. The secure nuclear power and research facility, located in New Mexico, was staffed with almost two hundred men and women who represented most of the world's knowledge about nuclear power. It was exactly the place Tom believed he needed to be asking questions about the power requirements for what he hoped to accomplish.

They flew one of the Swift's cargo jets out along with a load of supplies for the people out there. While a team of workers descended on the jet to unload its treasures, Tom headed for one of the three research buildings and Bud escorted Sandy and Bashalli to the main building where they could get some refreshments.

"I just wish that mother would okay me coming along for overnight trips," Sandy said sourly. "We won't even have time to drive into town to shop for jewelry!" She loved the turquoise pieces various local artists created.

Bashalli loved the intricate silver work of one particular artist.

But, as Sandy complained, there would be no time on this trip. "Maybe if I were married—" she said leaving the rest of the sentence unspoken. Bud only flinched a little.

The first person Tom visited was one of the longest serving employees at The Citadel. Dr. Timothy Slade was a foremost expert on the reaction of metals exposed to radiation, and had been of help to Tom in the past. But it was his most recent investigations and a paper he had just published that intrigued the young inventor.

"Tom, Tom, Tom," Dr. Slade greeted him. "So wonderful to see you. I see your father all the time, but you seem to be doing things all over the world *and* up there," he pointed at the ceiling and winked, "and now I hear that you are a married man, huh?"

Tom smiled and shook the older man's warm hand. "Yes. You've met Bashalli before. She and Sandy are here today, so if you get the chance it would please her for you to congratulate her. Just promise that you won't say anything bad about me or tell stories about when I was running around as a young teenager."

"As one old married man to a newly married man, I swear," he said holding up his right hand and bowing his head. "Now, I am

guessing that you didn't come all the way out here to illicit that promise. What can I do for you?"

Tom spent the following twenty minutes describing the probable black hole, his thoughts on using a wormhole to try to find out what might be going on, and his hopes for being able to calculate the amount of power necessary. "I've read your paper."

"Hmmm. Well. Yes. Well, well. That is a true poser, Tom. First, I think in order to understand power needs, you also must understand the nature of the wormhole, or whatever you wish to call it. Interdimensional fold, trans-cosmic shortcut, whatever. A lot of very good men and women believe in them but nobody has been able to point their finger and go, 'There. That's a wormhole!' *If you could find one and measure any energy fields, it would go a long way.*"

"So, not much to go on until I can bring one home in a jar, so to speak?"

"Well-l-l-l-l-l, perhaps. Let's take a theory from a gentleman I know. His name is Damon Swift. You might have heard of him?" His eyes twinkled. "Several years ago he postulated that wormholes are all around us, we just can't see them because they are so small, and they are only intrusions into our reality. Hundreds could be in this room right now. The secret is in figuring out how to find them against all of the other stuff around us. Now, as the theory goes, almost any sort of energy might open one up if, and it is a big if, applied precisely at the correct point."

"Any energy?" Tom asked.

"Potentially. Great heat energy can excite matter just as effectively as nuclear energy, and with a lot less damage. Now, the reason I mention nuclear energy is because of an old film I saw. The genesis of my paper. It was taken by a camera shooting up from underground and bouncing off a chromed steel mirror mounted to a massive steel and concrete column. It was there to shoot a movie from right next to a nuclear bomb explosion."

He took a deep breath. "It was back in 1952 at the Nevada test site. Where most people see a video segment a few frames long, maybe half a second, that *they* say just shows a bit of dirt approaching the mirror—this accounts for it growing in size—and then disappearing, my belief is that the bomb's explosion forced a wormhole open for a brief time."

"Why do you think that?" Tom's heart was beating faster.

"Because, I also saw part of the surrounding energy disappearing into the small hole. Besides, if it were dirt, it would

have hit the mirror, *and it did not!* It seemed to pause for three frames and then disappeared in the same number of frames as it grew.”

Tom caught his breath. This was fantastic information. He sought for a question to ask. “How large did the hole open?”

“Oh, perhaps a few millimeters. Maybe five. All I know is that the people who reviewed it back in the day saw it as either dust or a defect in the film.”

“But, they wouldn’t have been looking for something more spectacular, would they?”

“No. As wonderful as I am sure they are, the United States Army reviewed and announced the results of that and many other above ground tests. And they, regrettably, didn’t have the imagination to look beyond simple explanations.”

Tom asked for and received the doctor’s estimates of the amount of energy that would have hit that point, and noted it in his computer. After thanking Dr. Slade, he left to visit a few others of the facility’s nuclear scientists.

One in particular, Dr. Jean Lawson—a researcher from the University of Michigan’s graduate studies program—was even more intrigued than Tom at the possibility offered by wormholes.

“I can see the day,” she told him, “when it will be standard practice to travel inside of the wormhole highway system to explore our nearby neighbors. The one thing standing in the way, if your theory is correct, is generating the energy to open the jar, so to speak. A single blast would not keep the hole open long enough to do more than shove a probe inside.”

Tom chuckled ruefully. “It would have to be a heavily shielded probe to survive a nuclear explosion. Besides, dad isn’t likely to let me purchase or build a nuclear device just to test the theory.”

By the end of the work day he had a lot of information about possibilities, but nothing solid to go on. He caught up with Bud and the girls in the cafeteria where they were having an afternoon tea party.

“Join us, Tom,” Bashalli urged. “The chef here is studying pastry making and he has provided up with a sample of his homework. They are delicious.”

Around a mouthful of cream puff, Bud said, “Dig in. They’re amazing!”

They finished the assortment and their tea while Tom told them about his discoveries. By the time they had to leave, all four

were excited about the possibilities, although Tom was still worried that he would never be able to create the energy needed.

For the next several days he experimented with, and researched, various forms of energy trying to find one or more that could meet the needs of duration and non-destructiveness. He immediately hit on one that could possibly do the trick for opening a small hole and for an extended period of time. Laser. As long as it was on, the hole ought to remain open.

He was certain that the act of opening a wormhole didn't occur instantaneously; it required the application of energy over a period of time. This seemed to have been demonstrated in Dr. Slade's recap of the nuclear explosion footage where it took several frames to both open and to close the hole.

If that were to prove to be the actual case, then Tom believed that a strong laser could open the hole, and it would remain open long enough once the power was turned off to push a thin probe inside. He knew the power would need to be shut off so that the laser didn't damage or destroy the probe he hoped to put in. The question then was once the hole returned to normal, would it literally cut off the probe? Would it allow any trailing tether to stay attached and even to move in or out?

There were a lot of question marks and he made note of about twenty of them.

By the time he left work Friday evening he had more than fifty pages of notes and theories and questions.

He no sooner arrived at home and kissed Bashalli than the phone rang.

"Tom? It's your father. Listen. I've just been on the phone with Barry Carpenter who is the science advisor to the President. He tells me that the word managed to get out about the black hole. Someone at the Asiago Observatory in Italy followed up on a rumor and then blabbed everything to a local newspaper. Barry believes the morning papers will be full of the usual panic and doom and gloom and wants us to have the heads up so we can be ready for the inevitable."

The reaction of the general news world to incomplete or fabricated events never ceased to amaze and bother Tom. "Do we know what sort of information the Italian might have given out?"

"Not really. My guess is that headlines will run the gamut from 'Strange Going's On in Neighboring System,' all the way to 'Death Star Ready to Engulf Earth and Scientists Kept It Secret.' If, that is, the past is anything to go on."

“Do you want me to call George and work on a news release?”

“No, Tom. That’s next on my list. I wanted you to know what to expect come morning.”

After hanging up Bashalli looked at Tom’s face with concern. He told her about the news leak.

“Do you believe this will be blamed on you and your father?” she asked. “If so, it is not fair.”

Tom snorted. “Aren’t most of these things? Seriously, I’m afraid the President is going to have to take the hit on this. It was his decision to not announce anything until we knew more. The problem is, it’s been weeks and we don’t actually know more. It’s a vicious circle and I really don’t want us to be caught in the middle of it.”

The next morning, and uncharacteristically, the news was fairly vague on the subject. One major network, the one Tom watched as he ate breakfast, had a thirty-second piece where the anchor stated:

“An astronomer at an observatory in Italy is trying to claim that he has discovered *something* in a distant solar system more than a dozen light years away. Although we do not have many details about his claim, it was announced in Italy this morning, their time, that the man releasing the information was known to have been intoxicated, is distraught over a failing marriage, and is said to be prone to odd outbursts. If there is anything more to tell you, we will. Be sure to tune in to—” and Tom had turned the television off at that point.

Their phone rang and Bashalli answered it before Tom could caution her to say nothing about the incident. He was relieved when she held the receiver out, saying, “It is your father, Tom.”

“Hi, Dad. Did you see the news?”

“Son, what I saw was the strength of the combined scientific community to put a lid on one rogue individual about something we all know requires considerably greater study before being announced. I received a call just before that news piece from Barry Carpenter telling me of the announcement in Italy. While he is as relieved as we are, he did say that the President is going to want to announce something in about two days—earlier if forced to—and wants to see the two of us this afternoon at the White house.”

They flew to Washington in Tom’s SE-11 and were met by a limo driven by a man Damon recognized.

“I can’t recall your name but you’re the man that picked me up

about two years ago when I came to Washington for a month.”

The driver laughed. “That’s correct, Mr. Swift. I’m Devlin. Still doing the same thing driving VIPs such as yourself and your son here.” He held out a hand and shook Damon’s and then Tom’s. “It is a pleasure to meet Tom Swift,” he said before closing the door and getting into the driver’s seat.

Devlin showed some form of ID at the back gate of the White House, and both Damon and Tom were asked for photo identification, but they were soon pulling up to a nondescript entrance shrouded by tall and dense trees and shrubs.

A single dark-suited man at the door nodded to Devlin and opened the door that proved to be an elevator. He reached around and pressed a sequence of buttons and then stepped back. “Good day, gentlemen,” he said as the door shut.

The cage rose one floor and then the back wall opened revealing a small room with one man sitting at a desk looking at a monitor that showed the inside of the elevator, and a Marine in full dress uniform holding a lethal-looking machine gun guarding the only exit door from the room. The man at the desk stood up and handed them clip-on identification badges.

“Don’t lose them,” he cautioned. “They’re used to keep track of where you are.”

“I know,” Damon replied. “We make them for you.”

The Marine stepped aside and the door opened into a wide hallway.

Just outside a woman greeted them and took them down the hall to a waiting room. Damon recognized it as the outer office to the Oval Office. Moments later the door opened and they were ushered in to see the President.

After warm greeting he got to the point.

“I need to know if you have any better idea about what we are facing than, say, four weeks ago.”

“Not really,” Damon sighed. “So far we haven’t been able to get a clear view of the anomaly.”

“Right. So the next question is do you think you will know more in another two weeks than you do today?” He looked hopefully at both of them,

Tom spoke up. “Well, sir, it’s difficult to say, but it isn’t likely. We are working on one possibility, but it is months or years away.”

“Okay. Then I have to ask the big one. Are we in trouble? Are

we going to be sucked into a black hole and all civilization destroyed?”

Tom looked at his father who nodded. “Go ahead. Tell him what you know.”

Tom cleared his throat. He had the full attention of the most powerful man in the free world. “From a purely physical sense, sir, or rather from a *physics* sense, everything in the universe is moving. Observations say that we are moving through space at a pretty good rate and there is no reason to think it is otherwise for everything else in our galaxy. If whatever it is, is moving toward us and we are moving toward it at our usual pace it will still take several hundred thousand years to cover half that distance. Perhaps six or seven hundred thousand until we could tell with the naked eye that the nearby star is not just a bright local planet.”

“So, if something is going to happen, it’s likely to happen in more than half a million years?”

“Yes, sir, but only if we are moving toward each other.” Tom glanced over to see if his father concurred. The older man was nodding and smiling.

After a minute of silence, the President asked one final question. “If I were to find a way to provide funding, and if I were to then assure the public that you were working on a way to ascertain exactly what was going on, would I be telling a lie?”

Tom spent a few minutes telling the man a little about his research and the potential for such long-distance travel. He finished with, “I cannot and will not swear that we will ever find a way to get exactly where we might wish to go. Everything we find might point in the exact opposite direction. We don’t know. But I can swear that we are onto something and that such travel might be possible. Is that sufficient?”

The President nodded and turned to go back to his desk. Damon knew this was a signal so he tugged on Tom’s arm to get him moving to the door. “Thank you, Mister President, for your valuable time,” Damon said as the door magically opened and they left.

Little was said on the way to the airport and only slightly more as they flew back to Enterprises. On arrival, Damon went straight to the shared office while Tom headed to his underground lab.

For more than two hours he poured over his folder of notes.

He picked up the phone after the third buzz caught his attention. “Yes?”

It was Munford Trent. “Tom. I’m glad you are still down in your lab. Your lovely wife is calling. May I transfer the call down there?”

Sitting up straight, Tom told him to put it through.

“Hey, Bash. How’s my favorite wife?” Tom asked when he lifted the receiver. “I should be out of here in about, oh, fifteen minutes.”

“Then I am glad to have called now, before you leave. I would like you stop by that large building supply store on your way home. I have been reading an article on the Internet and would like to see if they have a new organic cleaning solution for our kitchen. Could you?”

“You bet. So, what is this miracle potion that I can bring home?”

She named a product Tom had recently seen advertised on television. He didn’t want to tell her but he already believed that the big box home improvement store would not have the exact product—they tended to have house brand versions—but he would see if they had an equivalent.

They did not, and an inquiry with the store manager told him that the cleaner was too new and too proprietary. She suggested something they *did* have. He thanked the woman, purchased the smallest bottle, and headed for the exit convinced that he could find Bashalli’s choice at the grocery store near their home.

Tom walked out of the building supply store and crossed the parking lot to where he had left his convertible. He dropped his purchase into the trunk and then climbed into the car.

As he started the engine he saw a large pick-up truck—more like the trucks used to haul large pre-built home sections—pull forward from a place about fifty feet in front of him. He was about to put his car in gear when he looked back up to see that the large truck was now bearing down on him and didn’t seem as if the driver were inclined to turn away or even stop.

Tom put his car in reverse and began backing up. But, as he looked in his rearview mirror he could see an identical truck coming up from behind. In seconds, he was boxed in by the trucks that had stopped inches from his bumpers.

Irritated, he was about to get out when the first truck moved forward. The slow impact shook his car and Tom, in dismay, could hear the metal of his car being pushed and crunched.

A second, more violent shake came as the truck behind him

moved forward and began crushing his trunk.

Tom tried the handle of his driver's door. The frame must have already been bent as the door was totally jammed shut.

As he sat there, Tom's car was slowly being crushed with *him trapped inside!*

CHAPTER 6 /

COME BACK TO ME

TOM QUICKLY grabbed the release handle for the car top and pulled it down. He then shoved up and back with both hands to push the collapsible roof of the convertible toward the trunk. Reaching to his right he popped open the glove box and yanked out the eGun Harlan Ames insisted he carry.

The truck in front revved its engine and began creeping forward, crushing the hood under its bumper and causing the car to shake violently.

Tom stood up on the car and took aim at the windshield of the forward truck. **ZERACKK!** The bright electrical beam from the gun shot out and splattered against the glass. It did nothing more than create a small electrical light show, but that startled the driver enough that he must have taken his foot off the clutch, causing the truck to lurch forward almost a foot and killing the engine.

Thumbing the control on the back of the gun to its maximum setting, Tom spun around and took aim at the grill of the truck behind him as it pushed forward crushing his trunk by almost fifteen inches.

ZERACKK! ZERACKK!

Although the driver inside would be insulated from the electrical fury he unleashed, the entire electrical system of the second truck was not. A loud popping sound came from under the hood and that engine also died.

He spun once more when he heard the door of the first truck slam open. Now, almost without thinking, Tom's thumb pressed the button on the gun to drop the charge back to a level safe for disabling a human.

The man, his face covered by a knit balaclava, dropped to the ground and began to move forward keeping close enough to the truck body that Tom didn't have a good, clear shot. Tom realized he was about to get into trouble. As the first man moved forward, his hand reached into his jacket and pulled out a .45 pistol. Using his free hand, the man pulled back the top of the gun and Tom heard the telltale sound of a round being shoved into the chamber.

But, as Tom concentrated on getting a good shot at the first man, he could hear the door or the truck behind him open and that driver drop heavily to the ground. He dared a quick glance behind and saw that the second man, clad identically to the first,

had landed badly and was awkwardly attempting to rise. That meant Tom had a few seconds to concentrate on the first man.

He spun back facing forward and aimed his eGun at the first driver's right arm and shoulder that now poked around the front of the disabled truck's nose.

ZERACKK!

With a satisfying *thud*, the man toppled forward and hit the ground. Tom had no time to celebrate when he heard another gun being cocked close behind him.

An icy chill ran down his spine when the second man's voice growled, "Now you go'n ta die, Swift!"

Tom tensed as he heard the sound of footsteps approaching quickly, followed in rapid succession by the sounds of one body hitting another, one or both slamming into the back of his ruined car—shaking it so much that Tom lost his balance and toppled over the driver's door and onto the ground—mixed at some point with a loud, "Ooofff!"

He rolled to one side and leapt to his feet just in time to watch an amazing sight.

An older man, probably in his early 60s from the look of his gray hair, was facing the disguised second truck driver having just given the man a body tackle. As the would be attacker rose and turned to attack Tom's guardian angel, the older man's right hand shot forward and into the other man's chest, followed by his left hand ramming, fingers first, into the hooded man's neck.

With a somewhat sickly gurgling noise, the attacker dropped to his knees then slumped to the ground and lay still.

Tom yanked his cell phone from his pocket and dialed 9-1-1. As the older man brushed himself off Tom quickly reported the attack and their location.

He put the phone back in his pocket and held his hand out to the older man.

"I'm Tom Swift and you are my new best friend." He grinned at the man who returned it with a big smile and shook Tom's hand.

"I know very well who you are, Mr. Swift. It isn't possible in this day and age to not know who you or your father are. Oh. I'm Alexander Waterson, by the by. Call me Al." He looked at the man on the ground. "You don't have very nice acquaintances, Mr. Swift," he observed, wryly.

"So it appears. Umm, you did a pretty good job on that one, Al.

I don't think I've seen a man—" he paused realizing that he might be about to insult his savior.

"You've never seen an old duffer like me body check a bad guy and then disable him with his poor, old, arthritic hands?" Al chuckled and patted Tom on the shoulder. "It's okay. Actually, I'm not as old and decrepit as I look. Just turned fifty-seven last month in fact. And, as for the fancy hand work, I had a bit of training back in the day."

The distant sounds of at least two sirens could be heard.

"Oops. Got to go, Mr. Swift. Just tell the police that you did this." He looked around them and saw that a small crowd had gathered. "Check that. Too many people saw me. Guess I'll have to stay and give them a report. Just promise me that you won't make a big deal about me. Okay?"

Tom nodded. He grunted as he pulled open the driver's door of his car and stepped into it, kicking open the passenger side door and stepping out the other side. He knelt down and checked the pulse of the first driver. It was strong. Grabbing the bottom of the balaclava, Tom pulled it up and off the man's head. He let out a small gasp. Underneath was the face of a teenage boy, possible South American, and half covered in tattoos. Tattoos similar to those on the arm of the gunman in Oswego!

"Hey, Tom," Al called out. "Is yours covered with ink?"

"Yes," the inventor called back.

Now, the sirens were very near. Tom rose and went back to stand next to the enigmatic Al Waterson. Ten seconds later the first of two police cars, an ambulance and a fire/paramedic truck screeched to a halt next to them.

As the paramedics checked out the two attackers, Tom and Al were approached by an older man in a police uniform.

"Hello, Tom," the man greeted them.

"Hi, Chief Slater," Tom replied. He introduced Al to the chief of the Shopton Police force.

"Care to tell me what the heck happened here?"

Taking turns, Tom and Al gave him a description of what had occurred.

"So," the Chief said looking pointedly at Waterson, "you came out of the store behind Tom, saw what was transpiring and just sort of threw yourself into the fray? Literally?"

Al nodded. "That's about the size of it. I played a bit of college

football and the urge to tackle something sort of bubbled to the surface. Before I knew what I was doing I just reacted and ran forward. It was the luck of timing that the rear driver got out and was standing there when I hit him.”

“Chief?” called out one of the other officers who had been standing by the paramedics.

Chief Slater excused himself and walked over to the officer. They spoke in low tones for a moment and then the Chief returned to Tom and Al.

“Uh, my officer just pointed out that the medics are saying something about a paralyzed diaphragm and a ruptured larynx. That second thug should live, but he’s gonna need some serious surgery.” He looked right at Waterson. “Care to tell me how that happened?”

Al Waterson looked uncomfortable. He shuffled his right toe around on the ground before looking into the eyes of the policeman. “I was trained in hand-to-hand combat back when I was in the Navy.”

“You were a SEAL?” the Chief asked.

Waterson nodded. “Chief? I really don’t want problems over this. I know that I can get into deep trouble for using that training to attack that creep, but it just happened. Technically it’s covered by a Federal statute regarding provoked attacks in defense of others. I just reacted to someone whose life appeared to be in trouble. Can we leave it at that?”

Chief Slater took in and held a deep breath. As he finally let it out in a single *whoosh*, he nodded. “Right. All I know is that a Good Samaritan came to the rescue of one of Shopton’s leading citizens and a criminal was disarmed. You wildly swung your fists and happened to contact him in several vital places. That work for you?”

Al grinned. “As good as anything else. Thank you, sir!”

“Yeah. Say, Tom. Can I speak with you for a moment?”

Tom nodded. “Sure.” They walked over to stand next to Tom’s destroyed car. “What else can I tell you, Chief?”

In a low voice the policeman asked Tom about the mysterious Mr. Waterson. Tom reiterated that he had never seen the man before. He turned to point at Al, saying, “This is the first time—”

They both looked around in astonishment. Alexander Waterson was nowhere to be seen. The parking lot, now that the crowd had mostly left, was empty for almost a hundred feet.

“Well, I’ll be—” Chief Slater muttered.

After placing another call, Tom sat on the side of his crushed car and waited. Bud pulled up beside the wrecked vehicles ten minutes later as the first tow truck was dragging the forward truck away from Tom’s crumpled convertible.

“Parking lot ding?” Bud inquired, innocently.

“Something like that. Can you give me a lift back to Enterprises? I’ll check out a car to get home and back to work in.”

On the way Tom filled his friend in on the potentially deadly episode. “Just don’t tell Bash the whole story, and especially the tattoos,” he requested. “It’ll probably come out in the news anyway, but I want a chance to downplay any danger I might have been in.”

“I don’t know, skipper. If there was any kind of crowd there somebody is gonna want to get themselves a little attention by blabbing all about the guns and that karate geezer and how you proudly stood in your crushed car, bravely sending out shot after shot of deadly lightning—”

“Ha-ha-ha. Not funny.” Tom considered things for a few seconds and then added, “But probably true. Okay. I’ll give Bash the real play by play and then once she hears the civilian over-the-top versions she’ll see that I wasn’t in too bad a position.”

They pulled into the main gate where the young guard greeted them. “Hey, Tom. I just heard the news about you and some Jedi master taking out a team of assassins at the Builder’s Mart. Pretty neat!”

“Don’t believe everything the news reports, Davey. Most of that is hogwash.” They drove on as the slightly disappointed guard nodded and waived them through.

“Great!” Tom declared, disappointed. “Now Bash is going to be in a real state by the time I get home. I’d better call her right now and do damage control.”

“Well, good luck with that. I’m off to get cleaned up for a date with Sandy. You lucky married dogs don’t have to continually woo your women like we bachelors do. Ta!”

As the flier drove off Tom dialed his house. It turned out that she had not seen or heard any news broadcasts in the previous half hour, but Sandy had and had called.

“Is it true that there were five or six men attacking you?” she asked.

“No, it was two and one sprained an ankle just trying to get out of his truck,” he told her.

“And so there probably were no machine guns firing hundreds of bullets into your car?”

“No bullets were fired, Bash. Just my eGun.”

“So,” she said in an incredibly level and reasonable tone, “I should probably wait until you come home to get the actual story and not listen to gossip even if it comes from your sister.”

“Did you know that I love you, Mrs. Swift?” Tom asked her.

“I believe that I have a signed piece of paper swearing to that very thing, Mr. Swift. Come home soon. Do not stop for anything.”

She didn’t mind that he did not stop for the cleaner; Bashall was just glad to have Tom home and in her arms. “I can not believe how incredibly possessive I feel about you now that we are married, Tom, but I understand that I have to be strong and allow you to do the things that you do. Just as long as you come home to me after work or come back at the end of a mission, I will be a most happy woman.”

Tom stopped by Harlan Ames’ office the following morning to give him a report. As he suspected, Chief Slater had already provided the Enterprises’ Security chief with the police report.

“I am glad to get your side, Tom. Slater seems to think that you and this—” he glanced down at the pages in his hands, “—*Waterson* fellow may have been holding something back.” He raised one eyebrow.

Tom told Harlan about the man’s Navy SEAL background that had been omitted from the official report. “He just sort of appeared, tackled bad guy number two and administered two lightning-fast hits, and then disappeared just as suddenly. And, he really didn’t want to stick around for the police except there was quite a crowd gathering.”

Ames chuckled. “Then, you do have a guardian angel, Tom. One that can pop up and go away in the blink of an eye. Actually...” he opened his desk drawer and pulled out a thin folder, “I’d like to have you take a look at two pictures. Tell me if you recognize either.” He slid the folder over to Tom.

The top photo was of a man in a Hawaiian shirt and sunglasses. He was heavysset yet still athletic-looking. Nothing about the man looked familiar so he set it aside.

Then, Tom’s eyes popped out. “That’s the guy! That’s Al *Waterson*, Harlan,” he declared as he shook the second photo.

Although it had been taken with a telephoto lens and was grainy, it was unmistakably Waterson.

Ames retrieved the photo before Tom could shake it to pieces. “I kind of thought so. His real name is Quigley Sharpe, with an e, and he is a CIA man. I’ve known about Quig for three years and even had lunch with him last month.”

“What?” Tom was now very confused.

“I didn’t know he was on a case. Of course he couldn’t tell me. He specializes in doing exactly what he did for you, Tom. Without the person knowing it in most cases. They’re called ‘watchers’ and they invisibly protect high-profile individuals. Now, don’t you ever repeat this, not even to your father and especially not to Bud or your wife, but watchers only appear for one reason. A known or greatly suspected threat to the protectee’s life.” Seeing Tom’s reaction he went on, saying, “That means the CIA has credible evidence that somebody is after you. I’ll have to invoke a few veiled threats and make some promises but I’ll get a read in on this so I can do my job. For now, the best thing for you to do is to stay away from dark, deserted roads, don’t walk down the middle of bad parts of town where street lights are not working, and keep your home security system on.”

Tom took a moment to digest all of the information, and then he asked, “So will this Quigley guy be watching me?”

Harlan shook his head. “Nope. He’s been outed. In fact he probably won’t be back in the field for a year because of this. Normally, watchers disable would be attackers without people like you being aware it has happened. And, with no crowds of onlookers. In this case, your twin attack trucks and imminent danger called his hand.”

Tom paused as a thought hit him. “There’s one other thing. Remember the sedan that tried to attack us in Oswego?” Harlan nodded, slowly. “Well, I think the tattoos the guy with the gun had on his arm are just like the ones on these truck drivers’ faces.”

“And now, I am liking this even less,” Harlan told him. “You see, the two punks with the monster truck fetish turn out to be part of a suspected Columbian drug cartel. They’ve been performing contract work for several suspected terrorist organizations in the Middle East to raise operating capital. I’m hoping there’s no connection.” He promised to tell Tom anything else he discovered.

Tom, in turn, promised to keep mum about the CIA man and his responsibilities. He thanked Harlan and went up to the shared office.

“Good morning, Son. How’s Bashalli taking last evening’s little, umm, scuffle at the building store?”

“Pretty well, actually. She hadn’t heard anything until Sandy blabbed all about the worst of the inaccurate news reports. Fortunately, I appear to have married a woman who doesn’t automatically expect or listen to the worst.”

Mr. Swift chuckled. “I know. I’m married to one of those as well. But, I’ll have a talk with your sister. She’s still young enough that gossip seems to be the thing to do. It’s time to let her in on the secret of a good adult life, and possibly a good solid marriage. Listen first before you jump and shout.”

Tom looked over at his father’s desk. “You seem to have a big stack of photos there. Anything I should know about?”

“These,” Mr. Swift replied picking up about half of them, “are the first pictures coming down from the refurbished Hubble. Take a look.”

Tom came over and took the half stack his father was offering. He sat in the chair facing the desk and began looking through them. After the first dozen or so he set the stack down.

“Not much, is there?”

Damon Swift shook his head. “No. Not much. Of course this is the nearest black hole to us and so there might be some level of distortion caused by the proximity of that gravitational field, but one of the astronomers up on the Moon has postulated that it might be all due to the time it takes to get enough light for a single shot. It’s upwards of three minutes. And, during that time he believes the anomaly is moving quickly enough to blur everything.”

Tom shook his head. “That doesn’t ring true, Dad. We’re getting the same lack of focus on the Megascopie yet the basic visual display from the Moon is clearer. Of course that might be because it doesn’t have as much magnification as the Hubble or space probe. I’m stumped. And, I know I sometimes sound like a broken record, but somehow we may have to go out and take a look ourselves.”

His father chuckled. “I thought that might be the case. But, there’s no way to simply pick up and travel twelve or thirteen light years. The best we might do this week is to try to transport an even larger space telescope out to the edge of our solar system.”

Now it was Tom’s turn to smile and chuckle. “Well... actually, there might be a way to go see it.” He reminded his father all about his wormhole research and how he was currently leaning

toward a certain set of theories that seemed to make the most sense when taken together. The conversation stretched into the afternoon with them taking only a quick break to eat lunch wheeled into the office by Chow.

Seeing how serious they appeared to be, he quietly set things up in the conference area and left. As the door closed, Damon called out a simple, “Thanks, Chow!”

They only stopped the discussion when four o’clock rolled around and Damon had to leave for a meeting at the old Construction Company.

As he picked up his tablet computer and a notebook, he told his son, “I’m not only intrigued, I can practically see how you have this plotted out. Good logic, by the way, and I must say that I’m impressed with ability to take so much disparate information and digest it into one path that sounds as if it must be the right one. Why don’t you and Bashalli come over for dinner tonight and we can finish this discussion?”

Tom rose to go to his desk, saying, “I’ll give her a call, but I’m fairly certain we’re open. I’ll let momsie know so it isn’t a big surprise and find out what we can bring. I just hope you and I can come to some conclusion on this, and I can convince you to let me start building a probe to test the theories.”

Mr. Swift turned from the doorway and smiled at his son. “That would be nice, but in case you can’t read between the lines, I’ve already agreed that it *exactly* what you should do!”

Tom’s mouth gaped open.

“Oh, and while you’re at it,” Damon said with a grin as he held out a letter in his right hand, “why not get started building that new space ship. Uncle Sam is good for all development costs!”

CHAPTER 7 /

SHALLOW, DEEP, AND DEEPER STILL

PLANNING THE next steps took a week. During that time Tom also revisited his designs for the intergalactic spaceship. He made refinements to it after making a list of a multitude of possible things that would need to be carried inside. Finally, he ran out of ideas and turned back to what he might do in the immediate future about the anomaly out there. And, that led back to wormholes.

He decided to repurpose a small camera and imaging probe he intended to use to explore down inside the wells at Helium City. Just a fraction smaller than a softball, the smooth, round probe was a marvel of micro-miniaturization. Inside was a camera with its high definition lens fed by a thin yet flexible fiber optic strand that could be extended out about a foot once the probe had dropped out of the bottom of the well pipes. He intended it to explore the partially broken dome that once separated at least two chambers of helium.

Normally straight and stiff, the combination polymer and glass strand could be reeled out and then back inside. The twelve inches was about the maximum the ball could accommodate.

Also inside was a special pixel multiplier computer. It took the incoming digital picture information and trebled it, making each single pixel now a grid of three by three, or nine total pixels. The incredible thing about this circuit was that each pixel was carefully examined to see how it flowed into any surrounding pixel. All of that information was used to smooth and manipulate the total enhanced image.

There was no room inside the ball for all of the processing computers necessary to complete the job. That required an external system, an offshoot of his SuperSight system, to do the final work and to assemble the image.

Motion video was absolutely out. In fact, it required almost one minute for the set of six synchronized computers to process a single image. Fortunately, it only took one-quarter of a second to get the necessary input from the fiber optic extension and lens.

On the negative side, the probe could never be made to be self-powering so it required being tethered to the master computers. The power needed to slowly and carefully reel the fiber out and in using the heavily-gearred system would have demanded a battery far too large to fit into the ball.

Now, it was to be part of a new rocket probe he intended to send out to the presumed location of a scattered field of micro wormholes. The speedy rocket would take three days to arrive, and after unfolding a trip of large solar power cells, it would have enough power to hold a search and location mission of up to five days, with power in reserve to open the hole wide enough to insert the fiber optic probe and to take up to three photographs.

After that, the entire rocket and probe would need five days to recharge enough to take a second series—assuming that the fiber was still inside the wormhole. If it had slipped out and could not be located within a few hours, the rocket would automatically turn itself around and head back to Earth.

“Hey. I’m up for a game,” Bud declared when Tom first showed him the ball. “Oh, no. Wait. Is that the helium thingie? The one you want to drop down into the great abyss of the wells down there?”

“Good eye, flyboy. It is that same ball, but I’ve been fiddling with it so I can use it to take a little look inside a wormhole.”

Bud nodded enthusiastically, but Tom cut any comment off with, “Before you come up with something like *Eye in the Sky* or *Worm Peeper* I want you to know that I’ve come up with a name for it already. Bash and I came up with it, actually, so it stays. It is called the WHIP, for Worm Hole Investigation Probe.”

Bud understood that with Tom’s wife involved, he needed to back off, so he smiled and nodded. “Sure. That makes sense. WHIP it is. When do we cracking? Whip—cracking? Get it?”

Tom gave Bud a slightly withering look. “Nobody takes it up. After all the probes we’ve flung out in space this past year or so, Dad authorized the building of three fast, reusable rockets based on the one we sent to our Space Friends before they finally came to visit.”

That rocket was repelatron-powered and was under constant acceleration as it raced out toward and past the Moon. Somehow, the aliens had been able to snag it at high speed and took it back to their near-Mars outpost. It contained a visual communication system as well as a video recorder. They had returned it filled with material and food samples as well as detailed videos, but only of their hands, their primary means of communications.

“How far out will this go?”

“That’s a little hard to say right now. Between data we’ve been collecting ourselves down here and up and the Outpost, along with observations from all of the astronomers using the space prober

up there, I am fairly certain I've detected a pattern that might indicate where the wormholes are. If I'm right, the probe will go about twenty-three million miles beyond the orbit of Mars, but at a tangent between here and the Red Planet that will put it more than eighty million miles behind Mars' position."

"How did you find them?"

"I *think* we found them using the space prober. The Outpost scanned specific areas and I wrote a new program to detect anything different, in almost microscopic sizes. What we ended up with is one fairly large area that has hundreds of tiny spots where the prober data comes back missing. I believe that's where it encountered wormholes. We'll see."

"Okayyyy," Bud said cautiously. "When?"

"Six days," Tom told him. "That gives us optimal travel distance and angle to the potential field. Within a day of arrival we'll know if I've figured it out, or if I just wasted a couple million bucks."

Bud chuckled. "Lots better than if the big boys were sending up something. They can't figure out how to even fuel up a rocket for less than a few million."

The day before launch Tom and Bud, along with Hank Sterling and three rocket technicians, headed out to Fearing Island and set up the fifty-foot rocket for its journey. Everything checked out and the following morning the first, solid rocket, stage shot the rocket into the air. As it fell away to parachute back to the island, the repelatron turned on and out the rocket raced. In less than two hours it passed the Moon. It had, when it reached about fifteen hundred miles altitude, opened the large solar collectors that would feed the repelatron long after the demands on the nuclear power pod would have exhausted its energies.

On schedule, the rocket turned over and aimed the repelatron first at the approaching Mars and then at one of the larger of the asteroids in the ring between Mars and Jupiter.

As it reached the target area, the onboard computers began the two main functions that now were vital. First, they kept track of all objects out there that could be used as points of focus to maintain their orbit and to even maneuver around, and they also searched for the missing energy signatures Tom felt represented wormholes.

The rocket reported that it had parked in a location close to one possible target and had ejected the ball-like probe on its power and data tether.

To everyone's delight the probe radioed back success in both

the location and approach to what might be mankind's first purposeful interaction with a wormhole. Everything Tom saw on the readouts coming through pointed to that fact.

"Let's have it bump up to the spot and prepare to fire the laser," he ordered.

"Moving it in by three feet," the technician stated. A moment later his head stretched forward and he peered at the screen. "That's funny."

"What?" Tom asked now looking at the readouts.

"It's moved!"

"By how much?" Tom wanted to know."

"Let's see... I've got to back the probe away a foot or so... there. It has moved about one inch in the two minutes it took to get aligned and close the gap," he reported. As the two watched, the data changed over the following minute indicating another half-inch of travel.

"And, the probe isn't the one doing the moving, is it?" Tom asked.

The tech shook his head.

"All right. Now we know that at least this one isn't stationary. Let's realign and account for drift and then move back in."

In minutes the probe was up next to where the possible wormhole was located but registered nothing of any substance. At Tom's command the laser was activated and the micro-thin camera fiber extended and ready. Two seconds later Tom gave the order to push the probe in. A cheer went up when the rocket sent back data supporting a successful insertion. Now, the waiting began.

Five minutes later a data bundle was transmitted from the large rocket using one of the almost-instantaneous transmitters Tom had been given by their Space Friends.

The data consisted of all the raw pixel-tripled image information that now had to be fed into the modified SuperSight.

The results were both fascinating and disappointing.

Later, as he showed the single photo to his father, Tom exclaimed, "Our first look into a wormhole—and I'm now convinced that's exactly what this is—turns out to be a snapshot of a light show and not much else. I guess the actual probe can't get in far enough to get more than a hint of the extent of the thing." He sighed.

“I agree. It looks like you need something that can get farther in. Do you have any ideas?” Damon asked his son.

“Yes. I’ve already ordered the probe and rocket to return to Earth orbit. And I think I have a plan to replace the short optic fiber with a much longer one. Perhaps as long as fifty feet. If I just remove the geared mechanism to extend and retract the fiber, and replace that with a spring-loaded ejection system to shove it out, I can pack that all into the same space in the probe ball.”

Mr. Swift nodded, but asked, “If that gets it out, what do you do to get it back in? Assuming, of course, that you intend to reel it in.” He looked curiously at Tom.

“Once we get several pictures from several points inside I think I’ll opt to back the probe ball and the rocket away, withdrawing the fiber, and then cut that free so the probe can be recalled.”

“At a cost of what?”

“About five bucks,” Tom replied. “You can take it out of my allowance.” He grinned at his father. Both of them knew that Tom’s experiments, devices and inventions took up a goodly share of the R&D budget for Enterprises—and Tom had been taken to task a few times for expenses—but the fact was that many of his inventions paid large dividends in the form of sales, leases and licensing fees.

Grinning, Mr. Swift said, “I’ll ask Bashalli to withhold that from your pocket money.”

Two weeks later the probe was ready for its second flight. Tom intended to go back to the wormhole he had already located and to go deeper. Calculations showed that by the time the probe arrived, the wormhole should have traveled a little over 850 feet. When the rocket reported that it had arrived, Tom found out that the calculations had been accurate to within about one foot.

This time, the fiber was inserted into the laser-enlarged hole a full five feet at first. Once two photographs were taken it was extended to its full length of fifty feet. Two additional photos were taken.

As before, the first photos showed a light show and a little more detail about the inside of the hole.

Tom practically smacked himself when he realized that this must be caused by the laser that remained on to keep the hole from collapsing.

And, once the photos from the fifty-foot mark were processed and displayed, he was sure of it. To the amazement of everyone

who looked at them, the wormhole looked not so much like a light show in a tube as it did a lumpy and slightly lit tunnel. He focused on the tube but could get no definite details.

What did catch his eye and take his breath away was at the very center of the second of these deep photographs.

It was an unmistakable bright dot of light.

“Could that be the end of the tunnel?” a technician asked in awe.

“I suspect that it is. Too bad,” Tom sighed, “that we can’t extend the optic fiber any farther. Oh, well. Pull everything back slowly. Go ahead and take a few shots at, let’s say, ten foot intervals on the way out. Then, pack it all up and get the rocket heading home.”

When he looked at the results with his father later that day, the older inventor simply stated, “As long as you think that might be within reach, it appears that you will have to make at least one more trip out there with a longer lens.”

Tom spent a couple days trying to decide what to do. He was explaining it to Bashali one evening as he helped clear the dinner dishes.

“So, your ball is only able to hold the fifty feet of this marvelous glass fiber for the camera?”

“Yes.”

“Well,” she told him with the simplistic truth of a child, “you must either build a larger ball or find a way to feed more fiber into it. Would it not be possible to do one or the other?”

Tom put his arms around her from the back and gave her a hug. “Bash? You’ve hit the nail on the head. It’s exactly what I need to do, I just haven’t figured out how.”

She turned around, still in his arms. “Can you build a larger ball?”

He shook his head. “Not and use the same rocket payload section. Not enough room without a major rebuild.”

“Fine. Then could you put a large reel of this fiber into the rocket somewhere and push it through the same cable that you send electricity and information?”

It was something he had considered the day before but had set aside as being impractical. “The fiber is so very thin that there is really no way to push it through the cable, even inside a thin Teflon tube.” He kissed her for her ingenuity.

She accepted the kiss but pulled back asking, “Do you have to *push* it through the tube? Could you not pull it out using something inside the ball? What I mean is, you would no longer need to have any spool or mechanism in the ball. Could you use that room?”

He drew her back into an embrace, telling her, “Bash, you are an absolute genius. Yes. There is probably some way to devise a small set of pincher wheels rotating in opposite directions that would clamp the fiber in between them and ease it up through the cable. You’re amazing!”

When he arrived at work the next morning Tom had already come up with the basic design for what needed to be built. He knew there was enough space inside the rocket for the spool of perhaps one thousand feet of optic fiber plus the mini-winch to recover it later.

A thin and slightly stiff tube of Teflon plastic was commercially available and probably the best thing for his needs, and so he had the Purchasing department order him a one hundred foot roll.

By the time the probe returned from its second trip, the basic mechanism was built and had undergone several tests in the large water tank at Enterprises. The almost neutral buoyancy was a good environment for such tests.

Bud had helped set up everything telling Tom, “It’s starting to look more like a fishing line and a bobbing float than a highly scientific device. You’re even going after worms. It all sounds suspicious!” He had been grinning as he said this.

Finally outfitted with the re-modified probe ball, a new tether cable system and the reel of optic fiber, the rocket roared skyward one more time.

As with the second mission, the location had been computed before launch so that the rocket would arrive near to the hole. The only difference was that the hole had not only moved in a mostly horizontal direction this time, it had also risen—relative to the plane of the solar system—by over one hundred feet.

Tom and the technician found the hole and the rocket made the approach. This time, rather than stand off a hundred feet, it needed to remain within a few yards of the probe ball due to the shorter tether system.

Taking a chance, Tom had decided to outfit the ball with a more powerful laser. He wanted to know if increased power would open the hole more than before. He was not disappointed by the results. An increase of fifty percent in laser output opened the hole

a further fifteen percent. That difference gave him enough data to realize that trying to get a manned vessel into one of the holes was going to require an enormous amount of energy, and that was going to create an incredible amount of heat.

His thoughts were interrupted when the tech called out that the optic fiber had reached the one hundred foot mark. "Taking a photo now, Tom."

Tom was as excited by what he saw that he phoned his father. "Dad. You have to come see what the probe is showing us!"

Damon arrived on the run, only slightly winded, six minutes later. "I'm here. Show me the excitement-inducing pictures."

They were everything Tom had hoped for, and more.

At one hundred feet inside the wormhole, the glowing dot that had appeared to be an indeterminable distance away now seemed to be within yards of the lens. It clearly illuminated what both Swifts believed to be the end of the tunnel and a tiny opening in the center.

"That is incredible," Damon said reverently.

Tom could find no words.

"Does that mean that the wormhole is just about the length of a basketball court?" the technician asked.

Both Tom and Damon laughed, bringing them out of their reverie. "It could be exactly that, Mark," Tom replied. "I hope that it's that short inside but that the exit point is billions of miles away. Let's just hope that light isn't something like a bright spot on Jupiter. That would be a disappointment.

Mark typed in the command to extend the probe, this time stopping it every two feet for another photograph.

Five hours later, and with Damon having left an hour into it to attend to company business, the probe was reaching the end of the available optic fiber. More importantly, it was increasingly evident that the end of the tunnel must be mere inches away.

"Three feet of cable remaining, Tom."

"Let's use a foot of that," the inventor suggested. "Then take a picture and we'll see if we are noticeably closer. If not, we may have to give up. Again," he groaned.

It wasn't that next photo that changed Tom's life. It was the following one. The one taken *outside the wormhole exit*.

It showed an amazing sight and one that told Tom, better than

anything else, that the wormhole was light years long, not just the ninety-nine feet of the apparent tunnel. It showed a binary star system in the great distance. It was unlike anything ever seen by a human.

* * * * *

The next day Tom and his father left for a two-day conference with a number of astronomers, astrophysicists, and Government officials, including one hour-long meeting with the President of the United States. This time they had exciting news to impart.

At these meetings they displayed all of the photographs, described how they had been achieved, and talked about possible ways to utilize what several of the attendees jealously referred to as “Swift Voodoo” to explore the galaxy.

“Gentlemen,” Tom cautioned, “You’re putting the cart before the horse I’m afraid. We barely have been able to insert a probe fiber a quarter the thickness of a human hair. That required enough laser power to open as it takes to burn through a thin sheet of aluminum. Our calculations show that anything larger requires exponentially greater power. I’m certain that some day we might be capable of more, but for now getting our probe this far is an accomplishment of a lifetime!”

* * * * *

Sandy was invited to spend the night with Bashalli at her home while Tom was away. When Bud offered to come keep them company Sandy had informed him that it was a “girl’s night” and that he could just sit in his apartment and worry that they might be up to something.

After dinner they decided to take a walk.

“Oh, Sandy. Isn’t it just the most beautiful scene up here? I wish Tom were here to see it with me. Us, I mean.” Bashalli said looking up at the darkening sky. The nearly full Moon was just a few degrees above the trees to the west and a lot of stars were becoming visible.

“It sure is, Bashi,” Sandy told her. “And I concur, except that I’d like to have my Bud here. Plus you and Tom, of course.” She grinned. “Hey. See that bright spot about, umm, I guess that would be fifteen degrees to the right of the Moon. Maybe twenty. Anyway, do you see it?”

“Oh. Yes, I do. It is very bright.”

“Yeah, it is. I’m pretty sure that’s Pluto. Now that Tom and daddy’s space friends’ mysterious overlords have moved it closer,

it's picking up a lot of light reflection.”

They had stopped and were gazing at the incredible sight when the still air was pierced by a loud snarling growl.

Both women froze to the spot.

The noise had come from just a few yards behind them!

In horror, they spun in time to see a massive animal jump up from behind a nearby tree.

CHAPTER 8 /

CROUCHING LOONEY, HIDDEN WOMEN

THE FEARSOME-LOOKING creature that had been crouching down next to the tree jumped to its feet and lunged at Sandy and Bashalli causing them to scream. Sandy was better at handling emergency situations than her sister-in-law. Her mind slipped into “reaction” mode while the older Pakistani seemed to have frozen in “panic” mode.

Grabbing Bashalli’s right wrist, Sandy yanked hard enough to get the other woman moving to their right. She kept tugging as they ran and stumbled over the rough road. No matter how hard she pulled, Bashalli seemed to be resisting a full-speed run. Sandy briefly contemplated that a quick pause and a slap might shake her out of her partially frozen state.

Two things made that unnecessary.

First, whatever it was chasing them let out a high-pitched scream/growl that sent icicles slamming down their spines. It served to snap Bashalli out of her reverie and caused her to speed up.

Second, as if that were not enough, Sandy ducked under a low-hanging leafy branch. Bashalli did not. It slapped across her face with enough force to finish bring her back to the moment. She pulled free of Sandy’s grip and surged forward. In seconds they were running side-by-side down the edge of the road.

To Sandy’s horror, Bashalli stumbled over an unseen rock. She had to reach out to steady her and they both fought to maintain their balance.

It was just enough of a slow down to allow the creature to regain the twenty feet of so of ground it had lost once both women had reached top speed. The chase continued for another twenty seconds before Bashalli gasped out, “I... can’t... go... much... farther...”

Sandy made a split second decision. Yanking her cell phone from her pocket she thumbed it on and stabbed down on the **CAMERA** button. A second later she risked a quick glance down. To her relief, the screen had changed. Bringing the phone up and pointing it over her shoulder, she pressed the **TAKE** button.

The strobe flashed brightly enough to even illuminate some of the ground in front of them. Behind, there was a growling cry of distress and they heard their pursuer trip and fall noisily to the

ground.

It's now or never! Sandy told herself skidding to a stop and turning around. In one motion she bound back the way they had come and took a flying jump into the air, coming down right on whatever it was that had been chasing them.

With a pained *OOFFFF!*, her feet connected with the man-sized body. Unfortunately, it also put her completely off balance and she fell backward hitting the road with her backside, jarring her entire body.

She sat, stunned, for a moment. Bashalli had stopped and was cautiously coming back. "Sandy? Are you all right?" she asked timidly. Receiving no reply—Sandy was hurting and her ears were roaring with the pain—Tom's wife ventured closer.

At that moment, their pursuer rolled over, ripped off the head of what she could now see was part of an elaborate costume, and pulled a gun from a hidden pocket.

"Get over here!" the man ordered through gritted teeth.

Bashalli knelt down to check Sandy. "No!" she stated. Sandy seemed to be recovering so Bashalli did something she had always wanted to do, in spite of the circumstances. "Sandra? How many fingers am I holding up?"

Sandy focused on the outstretched hand. "Five, but you have the thumb and pinky finger tucked in. Do I pass?"

"Get up, the two of you!" their former pursuer, now captor, hissed. "Up or I shoot both of you. I'm wise to your ways. You're one of them. I mean, you're two of them." As they watched, he pointed his gun toward the sky.

Sandy risked standing up. As she rose, she told him, "I don't know who you think we are, but what you have here are two extremely pissed off women. My guess is a guy like you doesn't have much experience with women, so let me tell you, this is not a good situation for you. For starters, I can see that I broke your left arm. It's kinda hanging funny. Good think you're right handed. Bet it's starting to hurt, too."

"Shut up! I know all your tricks! Trying to make me doubt my own powers. I'm The Wolf! I move by night and fight aliens like you." He winced and looked down at his injured arm. "Damn! You broke my arm," he accused Sandy.

"Duh! You were chasing us in that silly costume. How was I to know you were vaguely human and not some rabid cross between a giant bear and bunny. Where in the world did you get that

ridiculous outfit?” Now, she laughed at him and that seemed to both anger him and deflate him at the same time.

“Enough! Get moving. My secret lair is hidden just past those trees over there. Ouch!” He had tried to point with his broken arm. Even in the dimming light both ladies could see tears streaming down his face. It was obvious that the deranged man standing in front of them was feeling intense pain.

“Move,” he ordered them, moving his gun up and down. “The Wolf is in charge here. You’re my prisoners until I can turn you over to the World Police tomorrow!”

“Sandra? What do we do?” Bashalli hissed.

Sandy sighed. “I guess we go see mister wolfie’s little lair. And,” she lowered her voice to a bare whisper, “we try to get word to the police.”

“What are you two saying? Speak up. None of your alien gabbing.” Clearly, the man with the gun was insane, but it remained for them to see if he were actually dangerous as well.

After almost five minutes of walking through the dense brush and trees to the left of the road they came upon a haphazard pile of old shipping boxes. Some were as small as a couple feet across and the largest two were at least eight by ten feet. Sandy also noticed at least five wood cases that were to right size to have once contained coffins.

Inside, he made them sit on two, small upturned boxes while he removed his costume. It took him several minutes—filled with grimaces and whimpers—to get the broken arm out of the left sleeve. He dropped it to the ground and sat on another box, gasping in pain.

“Listen,” Sandy told him. “You’re a real kook, but you are an injured kook. I’m not a nurse but I do have a lot of first aid training. American Red Cross, not Neptunian or whatever you might think we’re from. Let me take a look. If you’ve got water and some clean rags I’ll clean that up and Bashi here can go find a couple of pieces of wood so I can split that for you.”

He looked into her eyes. “What sort of name is that?”

“My name is Bashalli Prandit Swift,” she told him. “I was born in Pakistan but have lived more than half of my life her in the U.S. My friends call me Bashi, as Sandra just did. You are not my friend so you may call me Mrs. Swift!”

“So who are you?” he demanded turning to face Sandy. “Sandra Day O’Connor? Do you both think that just taking Earth names is

going to fool me?”

Sandy tutted. “I don’t think that you are a fool, whoever you really are. As for being a lunatic, or a simpleton or even a psychopath, that remains to be seen. Now, you look about ready to pass out. If you do I could kick the living bejeezus out of you, probably breaking your other arm and even a leg or two, and then we just waltz out of here with your gun. The police will come and haul your broken carcass away *if* we even bother calling them. We might just leave you here to rot! So, stop being a total nincompoop and let us help you with that arm.”

“No.” He was defiant, but Sandy sensed he was near to giving in. “Sit back down and let me think.”

As he sat with his head drooping down, Sandy eased her hand into her jacket pocket. She had had the presence of mind to put her phone back in there before jumping on their attacker. Now, she flipped the **SILENCE** switch down and activated the phone. Nothing she did would make a sound.

She knew the position of the phone function so she opened it. Then, from memory she moved her index finger around the screen pressing where she believed the numbers were. If she had succeeded, the phone would be connecting with Enterprises Security special number. She pulled her hand back out.

“What were you doing?” he insisted. “You had your tongue poking out the side of your mouth. Humans do that when they are concentrating on something. Show me what you were doing!” He rose up and pointed the gun at Sandy. Saying a little prayer to the phone gods, she eased the phone out. It had gone into standby mode so she couldn’t tell if it had ever connected.

The man grabbed it and tossed it to the ground where he ground a heel of his boots into it.

“That’ll teach you!” he declared, sitting back down.

“Are we in trouble, Sandra?” Bashalli asked out of the corner of her mouth.

“Looks like it,” Sandy whispered back.

* * * * *

“Damn and blast!” Harlan Ames said rubbing his left arm. “It just went dead. Did we get any position info?”

His second in command, Phil Radnor held up one finger. “Hang on... yes! Not a precise location but I’ve got at least one cell tower reporting her signal. Oh...” he added, now sounding disappointed. “It’s one of the old originals that can’t give us a line

of bearing. All we have is that she is on an arc starting about two miles from the antenna and going out for another mile. Sorry, Harl.”

“Don’t be. Get that tower up on a map and give me a couple circles around it so I can see where she might be.”

Moments later Phil had the map and markings up on a large monitor in Enterprises Security Control center. Both men walked up to it and looked over the area.

“Well, a lot of that is in or near Shopton, so any signal should have been picked up by other towers or it wouldn’t have come through. Can you overlay these three and their coverage?” Harlan asked.

“Sure.” A few keystrokes later and the display changed.

“Ah. That’s a bit more telling. The call must have come from this area. Most everywhere else is woods, the lake or the corner of Enterprises. Hey. Isn’t that were Tom’s new house is?”

Phil looked more closely. “Yes, it’s near there. He and Bashalli live... here,” and his finger stabbed down onto the new development where they had set up house.

“All right, then we have to believe that Sandy went out for a walk somewhere near there. Maybe she was visiting the skipper’s wife. Get three teams out, pronto. I’ll take a fourth SUV out myself. You stay here and coordinate.”

Just as Ames headed out the main gate his TeleVoc buzzed. He tapped the pic. “Yeah?” he mouthed.

“Harlan. It’s Phil. I just got a call from Bashalli’s brother. She was supposed to come downtown to that coffee shop of his tonight after having dinner with Sandy. No show and an hour late right now. The two ladies must be together.”

“Thanks. I’m on my way!”

After arriving at the predetermined rendezvous point and assigning search sectors to the other teams, Harlan headed straight for Tom’s house. Once there, and finding nobody home, he sat in his vehicle trying to decide which direction the women might have taken.

“If I were those two, where would I want to go?” Then, it hit him. “To see the other homes being built.”

He started the vehicle and headed toward to far end of the sixteen-block development. He shown his bright spotlight on every one of the lots and partially built structures, and saw

nothing more than a pair of raccoons and one coyote. But, he also spotted two trails leading out of the developed area and into the surrounding woods. One, a narrow path barely wide enough for one person to pass through didn't seem to offer much.

The other one, a one-lane dirt road, did. Harlan drove up the road slowly, sweeping his light from side to side as he did.

* * * * *

“Okay. It hurts real bad. You, blondie, come over here slow. And, you, miss ‘I wasn't born in this country’—no kidding!—you sit nice a still over there. I'm keeping my gun on you. Smart mouth here makes one wrong move and I shoot you.” He motioned with the gun to have Sandy take a look at the arm.

“Well, it's a bad compound break. Both bones in there were snapped. I can reduce the outer one—it's the one sticking out through the skin—but the other one I have no idea what to do about except to splint everything.” She looked at the man. He was sweating, pale and a little pitiful-looking. If it weren't for the gun she might feel some sympathy. “What are you up to handling?”

He looked down. Blood was coming out of the wound and the two halves of his ulna were visible. He gagged at the sight and almost vomited. “Fix it!”

He pointed the gun at a pile of clothes and a 5-gallon plastic can of water.

Without asking which of his clothes she could tear up, Sandy grabbed a light blue cotton shirt and began tearing off strips. She wadded one of the larger pieces up and poured some water onto it. Carefully, she dabbed at the wound. As quickly as she wiped away some blood, more leaked out.

“Okay,” she said sitting back on the ground. “It has to be splinted and then a pressure bandage put on it. It's going to hurt. You really need medical attention.” She looked to see what he might be thinking.

“Gimme something to bite on and then get those bones back inside. After that do what you can to stop the bleeding. Anything's got to be better than this. Just don't drip any of your acid saliva on me!”

She reiterated the need for splinting materials. He pointed at an extra packing case. “Break that up. You ought to be able to get a couple of boards from that.”

He was right. One solid kick from her right foot and it practically flew into its component pieces. At least ten boards of

appropriate size now lay around the floor.

Ten minutes later, the bones had been partially reset—a good steady yank by both ladies had extended the arm enough to let them move back into alignment—and a few clean shirt strips had been bandaged tight over the hole.

As she finished, Sandy saw a light sweep past the doorway to the makeshift shack. It was all she could do to keep from running out. There was no way both of them could get out before the mad man started shooting.

* * * * *

Harlan was about to give up. He had reached the end of the road. Instead of leading to somewhere, it just petered out at a stand of trees. He made a three-point turn and headed back. By the time he reached the entrance to the road he was beginning to doubt that he was anywhere close. He radioed the other teams only to find out they had equally little success.

Phil's voice crackled over the radio.

"Hey, Harlan. I've been digging a bit and found another cell tower that registered a second or so of the call. The good cell and the weak one overlap out near that new Meadow Waters development."

"What! I'm there right now. Are you certain?"

"As much as I can be with only sketchy info. The main overlap isn't right in the development. It's out at the back. Does that help any?"

"I'll be da— Yeah. There's a dirt road leading nowhere back there. I was just on it but couldn't see more than fifty feet off the road. Get everyone over here for a search."

He spun the SUV around one corner and, deciding his needs were greater than being polite, drove diagonally across five plots of land and onto the back street. As he was about to head back down the dirt road, he saw lights approaching in his rearview mirror. A minute later two of the other teams pulled up and the third one radioed in that they had just flattened a tire and would be ten minutes behind.

Harlan got out and gave the two-man teams his idea for the search.

"I'll go right to the back end of that road with one man from each vehicle. You will head off the road about sixty to eighty feet and make your way back toward here. At the same time, the other men will start at this end doing the same thing. I'll stick on the

road in case you flush out anything or anyone. We should all meet about in the middle in, oh, forty or fifty minutes.”

The search got underway.

* * * * *

“You do know that the police will be out searching for us,” Sandy told the now weakened man. Blood loss was taking its toll. He was even more pale and sweaty and still in intense pain. “Let us go out and flag them down and we’ll get you to a hospital.” *And, then a looney hospital*, she thought.

He started to protest but lost his balance and slipped to one side. His bad arm bumped into the box next to him and he cried out in pain.

Before she could register what was happening, Sandy watched as a hand shot past her and grabbed the gun from the man’s hand. She turned around only to find that Bashalli was no longer inside the shack. Instead, Gary Bradley, Harlan’s number three man, was there with the gun in his hand and a grin on his face.

“Hey, Sandy. Who’s your friend?”

She almost fainted into his arms.

The next day she and Bashalli were called into Enterprises to have a talk with Harlan Ames. As they walked from the parking lot, holding hands to try to support one another, both worried that they were in for a severe lecture about hiking in unsafe areas.

Instead, Harlan gave them each a hug and invited them to sit. “Coffee or tea?”

They both declined, so he got to the point.

“I have to tell you that you were marvelous. We’re still trying to determine who that nut case is, and he isn’t cooperating. Just tells anyone who asks that he is ‘the wolf,’ or that he’s some sort of alien hunting super hero. No matter. From what you told me last night and what he has said, he was chasing you when you turned and jumped on him. He’s pretty steamed about the arm. Says he’ll never get the blood out of the suit. I take it he means that shambles of rags and fake fur we found.”

The girls had to giggle in spite of the seriousness of the situation.

“Anyway, our superhero says he won’t talk to anyone but the two ‘alien chicks.’ I assume he means you two. Are you up for it?”

Sandy smiled and stated, “You bet!” but Bashalli was more reserved.

“I suppose, if I have to, but I do not relish the idea of seeing that man again.” She sighed. “What do you want us to ask him?”

Harlan slid a piece of paper over to them. It contained a dozen lines on inquiry for them to pursue. They talked about possible questions to pose before he took them out to a waiting Security SUV.

Shopton hospital featured only one private and secure room. It had been deemed that the man was a risk to himself and to the staff and public, so he had been operated on to repair the arm and then transferred to the basement. Neither of the girls had ever been down there. The kitchens and storage rooms took up most of the space, but in the far right corner they came to a heavy metal door being guarded by a private security man.

He stood up and was about to tell them to go back when he recognized Harlan. “Oh. Mr. Ames. You here to see the wolf man?”

“I think you will find he prefers to be called The Wolf, sir,” Bashalli said, sounding slightly irritated.

After checking to see that Harlan also seemed bothered by his statement, the man apologized. “He’s lightly sedated but should be able to talk to you.” With that, he pulled a key from around his neck and unlocked the door.

Inside, a short anteroom let the threesome stand while the guard relocked the door. He then passed a second key through a small access slot to Harlan. He turned the key in the inner door and it slid to one side.

Now cleaned up and even with his face shaved, the man handcuffed to the bed by his good arm, turned his face and smiled. “Hey, alien ladies! Sorry about the mix up last night. I thought you were part of the attack forces those Swifts are bringing down to enslave us.”

Sandy felt her face drain of color, only to immediately heat up in anger.

“What are you talking about? What about the Swifts?”

“Man, everyone knows the Swifts are in cahoots with aliens. They’ve even gone out to set up the beacon. Now, they’re telling people it’s all just movin’ the telescope, but mark my words. Those Swifts are about to get us all killed, and now I’m not gonna be able to save us. And your dark friend there is all part of it!”

CHAPTER 9 /

HOLLYWOOD COMES INTO THE PICTURE

WITH THE success of the reconfigured WHIP probe behind him, Tom now began work on a brand new probe. It would be more self-contained and definitely larger. Because he now felt confident that his new understanding of the phenomena would let him streamline the process, he decided to replace the entire computer and command capsule at the top of the rocket with the new probe.

It was going to allow for two things. First, he could mount an even more powerful laser to see if his preliminary computations for power to size would be born out, and then he would be mounting an all-new camera system.

This time, he intended to get video. Full-motion video. Tom wanted a second by second movie of everything the camera traveled through.

He began by enlisting the help of Hank and Arv to construct both the outer shell of the new payload section as well as the inner brackets onto which all components would be mounted. The meeting took several hours as the trio poured over all possible components and their dimensions. In the end it was agreed to build an inner structure that, like a child's set of interconnecting blocks, could be put together, taken apart if necessary, and put back together in dozens of possible configurations.

As they were leaving, Tom mentioned, "We may need to build a central brace to tie everything together once we have this populated."

Arv smiled. "We can do that with a series of thin, tensioned cables. They'll take up a lot less room and can be installed really fast."

Once that had been agreed to, Tom began reading through Enterprises' and the Construction Company's roster of employees and specialties. He was looking for someone, or even a team, who was well versed in micro video photography. Instead of just using a long fiber with the actual lens remaining a hundred feet away, he felt there was a need to have a team member with an advanced understanding of getting high-definition results from miniature equipment. Nobody inside the company met his needs so he began searching outside.

Three days later he believed he had located the very person. She was known for her work behind the scenes on a great many

motion pictures, specifically those that made use of miniature sets and required complex computer-controlled shots that no human could ever hope to achieve. She was the top expert in the field of miniature camera development.

Mr. Swift asked that Tom get Harlan Ames into the picture. “We must follow the orders of the President, Son. Nobody is to know about this without being fully cleared. She might even need to be referred to the FBI.”

After the weekend Tom, Bud and Phil Radnor flew west in the *Sky Queen*. They landed at the airport in Burbank—Los Angeles International was considered to be too busy to accommodate them—and drove to a nondescript building located about two miles away.

The young woman, scarcely older than Sandy, who greeted them in the front office of a company named ISCW, Ltd., was confused that they had not made an appointment. She stood up.

“I’m sorry, gentlemen,” she replied in insincere sympathy, “but Ms. Warner—no relation to the studio—just can’t drop everything and see you. Perhaps if you call first she might fit you in some time next week?” She gave them a little pout to emphasize that she was supposed to be feeling sorry at this point.

“Perhaps, if you tell her that the inventor, Tom Swift, is here, she might make an exception,” suggested Phil. When that failed to impress, he pulled out his wallet and flashed his badge. It was only an Enterprises Security badge, but she didn’t get the opportunity to see much more than a glimpse. She gulped.

“Or, we can do this the hard way,” he suggested mimicking her little pout. “From our records you would be Misty Tidewater, born Glennis Davis, of fifty-two-fifty-seven Glen Morrie Place in Altadena. You live alone with two cats,” he continued from memory, “and drive a very old Pontiac sedan. You were arrested last year— Should I continue?” He now smiled sweetly at her.

She suddenly found that she needed to sit down. After a moment, Tom pressed her.

“May we see Ms. Warner now?”

She nodded. Looking at their expectant faces she rose and walked to a door to one side of the room. She knocked and slipped inside, closing the door behind her.

A few second later an attractive woman in her early to mid forties came out. She looked them over with curiosity and asked, “Can I be of some help?”

Two minutes later they were in her office with fresh cups of coffee. The mention of Tom's name had made an instant and favorable impression.

Phil cautioned her that what she was about to be told was in the strictest confidence. "But, as an ex-Navy Lieutenant with a Top Secret clearance I'm certain you understand," he told her.

She went to her door, popped her head out and told "Misty" to take an extended break out of the office.

Tom outlined the basics of his wormhole detection and his hopes for video both inside and beyond. As he told her the information, Beth Warner's face went from puzzlement to intrigue to astonishment to extreme joy.

"Oh, Tom! You bet. I'll drop everything and come out to New York with you. Let's see... I've got three projects running out here but the SFX guys can finish those up on their own. I might need to run back here for a half day next week, but say the word and I'm yours for the next, ummm, month if you need me that long!"

Bud grinned. "Did you just say all that in one breath?" he asked.

Beth grinned back. "I tend to get a lot of words out all at once, and when I do I generally speak until I run out of wind." She took an exaggerated breath.

By the time Misty returned, the office was locked, a note told her to keep things running and to not take off early, and that Beth would be in touch in two days.

As Misty was reading those words the *Sky Queen* roared eastward.

By the following day Beth Warner was working closely with the Photonics and Electronics departments at Enterprises to come up with a miniature, high-definition three-dimensional camera system. She was a very happy woman.

* * * * *

Tom picked up the morning paper and perused the headlines. It took him less than ten seconds to focus on one that made his blood pressure begin to rise. Determined not to ruin Bashall's morning, he folded the front section up and set it aside.

"I need to take this in to Enterprises, Bash. I hope you're finished with it," he told her as she sat down with their scrambled eggs and raisin toast.

She was not looking directly at him so he ventured a guess.

“You’ve already seen that article about our trip out to set up the old Hubble?”

Nodding, she softly replied, “Yes. I read it and I was not nearly as calm about it. You were in the shower and could not hear me yelling into my dish towel. I was most un-ladylike.” She looked into his eyes and smiled. “I will assume that you are going to have a small chat with the newspaper editor.”

Tom nodded.

By the time he reached Enterprises he was more than ever determined to do something he and his father had threatened several times. He said good morning to Munford Trent and asked him to connect him with the *Shopton Bulletin’s* editor.

“I have the Perkins man on line three, Tom.”

Tom took a deep breath, counted to ten, and then counted to ten a second time before exhaling and picking up the receiver.

“Is this Dan Perkins?” he asked.

There was a pause. He was certain his anger had come through, and the man on the other end was assessing how to handle the call. Finally, Perkins said, “Yes, Tom. This is Dan Perkins. Uh... what can I do for you?”

Well, this is it, Tom thought before saying out loud, “I have called to inform you, officially, that the *Shopton Bulletin* is completely cut off from all news releases, all on-site events and will no longer be provided with anything from Swift Enterprises. You have engaged in the worst kind of fear mongering over the years and always seem to point a completely uninformed finger in our direction. You might think that you are clever and that a Pulitzer is just around the next corner, but you’ve finally pushed all the wrong buttons!”

He stopped when he realized he was almost shouting.

“Geez, Tom. I know we’ve not always seen eye to eye—”

“Eye to eye? EYE TO EYE! How in the name of Edward R. Murrow can you try to deflect our incredible anger about this and many past stunts you’ve pulled by minimizing it to simple misunderstandings?”

Perkins gulped. “Okay. I admit we’ve jumped the gun in attempts to get the story before anyone else did, but I just got back in the office this morning from a vacation and honestly have no idea what you are so angry about. Give me the reason and I’ll respond. Just, please give me a chance.”

Tempted to hang up, Tom placed the call on hold. Let him listen to music for a minute and stew about this, he decided. Finally he reopened the connection and said, "I find it incredibly impossible to believe that you haven't seen your own paper today. I'm referring to the article at the bottom of page one."

Tom heard the man sigh. "Let me grab a copy and see what that little sh— that little moron did now. Hang on." There was an audible noise as he set his handset on the desk. A minute later the sounds of a paper being opened and set on the desk could be heard, followed by a series of expletives so rude and foul that Tom had to believe it was not an act.

"You are well within your rights to pursue legal action against the *Bulletin*, Tom. All I ask is that you give me a day to wring the neck of the little jerk who put that in. Then, after I hand you his hide, you can have my job and anything else." He paused before adding, "I can't believe this happened. Except, I *can* believe it happened."

Now, Tom was curious. "What happened, Dan?"

"I went on an unscheduled vacation two weeks ago. The ownership of the *Bulletin* has been riding me to put more pizzazz into the paper and to up the 'danger is all around us' factor. When I balked at it, I found myself on the end of a two week paid suspension and a little creep who just graduated with an MBA from one of those 'Daddy knows someone and they got me in' schools took over. He warned me as I left the office that I wouldn't recognize the paper when I came back. Guess I see what he meant."

They talked for a few more minutes before Tom agreed to hold off on the news clampdown, but would make no promises about legal action.

"You'll have a complete retraction and apology in tomorrow's paper, Tom," Dan Perkins assured him. "It may be too late, but it's about all I can do."

When Tom had the chance to talk it over with his father, Mr. Swift concurred with Tom's handling of the situation. "I say turn it over to the Legal department, but ask them to hold until we see what tomorrow's paper contains."

At lunch that day Bud asked Tom what all the "buzz" was about. "I only heard that something was in today's paper that is making a lot of people angry," he told the inventor.

Tom took out the article he had torn from the front section and unfolded it, sliding it over for Bud to read. "You take a look at that

while I make a little call.”

He tapped his TeleVoc pin and made a silent call to his father. A minute later he nodded and tapped the pin again. Mr. Swift had agreed with Tom. He next pulled out his cell phone and dialed a number.

“Hey, George? Tom. Listen. I need a company wide announcement to go out really soon. If I dictate it over the phone, can you clean up any pauses and *umms* and *ahhs*, then broadcast it all over Enterprises and the Construction Company?”

“Sure. We’ve done a lot of those. Usually it’s your father while you are deep under the sea or out in space or laying unconscious in some hospital, but we do a couple per month on average. Give me thirty seconds to transfer this call into a recording line.” The standard on hold music and announcements loop came on. Tom was just listening to a violin rendition of *In-a-Gada-Da-Vida* when George came back on.

“Okay. When you want to record, press the pound key. When you’re finished press zero and if you want to pause, press the star button.”

Tom recorded the message and then hung up.

By that time Bud was sitting there seething with anger. He had wadded up the offending article and had turned red.

“Simmer down. Bud. It is well in hand.” He told his friend about the conversation with Dan Perkins. As he was about to tell Bud that he was leaning on the side of believing the editor, there was a ***bong*** sound that seemed to come from everywhere. It was the start of the announcement:

Hello. This is Tom Swift. By now most of you will have read the unfortunate article printed in today’s Shopton Bulletin. Unless you are in the middle of doing something that cannot safely be paused or stopped, I would like all employees to pause and pay very close attention to what I am about to tell you all.

The Bulletin printed a totally fabricated article regarding my recent mission to repair and reposition the Hubble Space Telescope. We did so at the direct request of the President of the United States. I will not bore you with details but it involved picking up the telescope, performing numerous repairs and taking it to a new permanent location past the orbit of Saturn.

The Bulletin chose to publish a wild story not only accusing us of theft of the Hubble, it also contained about a dozen lies about the intent, each seemingly meant to instill panic in the public. These included using it to signal hostile aliens to acting as a secret beacon for incoming attacks. And even to be used to concentrate the Sun's rays to act as a super weapon. Anyone believing that is truly stupid. Let's set that aside for the moment.

I have contacted the editor of the paper and informed him that the Bulletin will no longer be considered as a legitimate news outlet and that they are henceforth cut off. He told me that the paper has been under management by someone new, someone installed in his position by the ownership of the paper, who printed the lies and innuendoes in his absence. Now that Mr. Perkins is back from a rather hasty vacation, he promises us that a retraction and apology will be printed.

While we take a wait and see approach, I want to let you know that the anger that is obvious in many of you is not to be acted upon. At the very most, if you feel you no longer wish to read the Bulletin, vote with cancellation of your subscriptions. Do not, under any circumstances, take any other action, not even phone calls.

Please. This may be a turning point in our relationship with the paper, and the news media in general. I want all public opinion to be on our side.

Thank you for listening and thank you for taking a calm and measured approach on this.

The announcement went silent.

“That will hopefully keep anyone from doing something drastic,” Tom stated hopefully.

Bud nodded.

Tom and his father were gratified when, that evening as they watched the local news from their respective living rooms, a special segment was announced.

“We now take you to the *Shopton Bulletin* and an address to

the general public from its editor, Daniel I. Perkins.”

The screen changed to show Dan sitting behind his desk, a picture of his wife and children prominently turned around so the camera could see it. He cleared his throat and spoke:

“Hello. I am Daniel Perkins, the editor of the *Shopton Bulletin*. As many of you will have seen, an inflammatory and defamatory article was printed in this newspaper this morning. It was directed at one of our local treasures, Swift Enterprises. While, in the past, I have written several unflattering articles and editorials about Damon and Tom Swift and their company—” he took a deep breath, “—several of which were published in haste and without proper checking of the facts, and were ultimately retracted, this recent article is unforgivable.”

Tom looked in wonder at Bashalli just as Damon smiled and nodded to his wife, several miles away.

“Because of my reluctance to turn the *Bulletin* into an all is doom and gloom paper pandering to unfounded fears among our readers, I was temporarily replaced in my position. The replacement, a totally despicable man barely out of his teens and with zero experience or tact, took over. I left the area two weeks ago only to come back to this. Today, he has slunk off to whatever particular slime hole he inhabits, and I am left here as a reviled individual.

“My family has already been threatened and my two children bullied at school today because of this.”

Perkins wiped a tear from his right eye.

“And so, at this time—and it will be reflected in tomorrow’s *Bulletin*—I totally, utterly and sincerely apologize for any damage to the Swift organization. I also retract each and every word contained in that article and ask that you regard it all as lies made up by someone who has left our area. And, now for the hard parts.

“I am submitting my resignation from the *Shopton Bulletin* effective at noon tomorrow. Depending on public opinion, I may be moving my family from the area as well. And, because this was all brought about by the ownership of the *Bulletin*, I call for all Shopton and surround area subscribers to cancel their subscriptions. But, not until you receive tomorrow morning’s edition.”

Perkins nodded to someone off screen and the picture changed back to the studio where a rather shocked and bemused female anchor sat staring at the camera until the director cut to a commercial.

Bashalli stood up and turned off the television before heading to the kitchen. “Dinner is in five minutes, Tom,” she told him.

The following morning the paper held a single headline and article on the entire front page. It was surrounded by a lot of white space and announced in text that stretched across the page *above the masthead*:

WE HAVE LIED TO YOU!

The seven paragraphs beneath reiterated what Perkins had stated on television the evening before and unreservedly retracted each and every point of the previous article. It concluded with a note of apology directed at the Swifts.

Once both Swifts were sitting in their shared office, Damon asked Tom, “Do you think this will put an end to all the speculation and lies?”

A little sadly, Tom shook his head. “Not really. The *Bulletin* may close down, but there will always be someone willing to lie just so they can be heard. If not Dan, then possibly someone totally ruthless.”

“Better the devil you know, then.” Damon suggested with a rueful grin.

Tom was about to comment when his phone rang. It was Harlan Ames.

“Tom, I’m glad I caught you. I wanted to let you know the latest, and hopefully the last, about the individual who detained Bashalli and Sandy the other evening.”

“I hope it’s good news, Harlan, As in, he’s about to be put away where nobody will every be inconvenienced again?”

“Practically. His name is Perwinkle Stowmeyer. Born in Lithuania and brought by parents into this country as an infant. They were here illegally and were deported a few months later, but the baby had disappeared. Turns out that he was given up for a private adoption to raise money for their deportation defense. Soon, he disappeared into society.”

“How do we know all this?” Tom inquired.

“Because, his adoptive parents gave him that name and were the ones to have him committed when he was just sixteen. Today, he would have been treated with anti-psychotic drugs, but back in those days it was padded cells and lots of sedation. Anyway, he’s been institutionalized for about thirty-two years. But last month he was being transferred to a brand new facility south of Albany

when he slipped away. They've been looking for him ever since."

"How did he end up here?"

"Nobody knows and he isn't telling. All he keeps repeating is that the Swifts are about to open a portal to alien invasions and he is the one hero who can save us. He is, after all," Harlan chuckled, "The Wolf!"

"What about now? Where does he go?"

"Some of that depends on whether Bashalli and Sandy want to sign a court document demanding that he be placed somewhere he can never get back here from. I've already got your sister in agreement. Can you ask your wife, please?" He told Tom that the facility he would be transferred to was in the northern portion of Montana, about two hundred miles from any major town or city, and was ultra-secure.

"It's the place the Government considered sending terrorists to years ago."

"I'll ask her and let you know tomorrow," Tom promised.

CHAPTER 10 /

GLIMMER OF GENIUS

HIS PHONE rang. Reaching out for it, Tom hoped it was Bashalli. “Hello,” he said sweetly.

“Uh, hello, Tom,” came a very masculine reply. “I’ll assume from the loving way you said that you were not expecting the ex editor of your local paper to be calling. Sorry to disappoint.”

Tom recovered quickly although he could still feel the blush of embarrassment warming his face. “Hi, Dan. I guess you heard about the demise of the *Bulletin*. I’ll miss the occasional correct and well-researched story. What can I do for you?”

“I deserve that. Say, I have been called to testify down in Washington D.C. with the FCC and then again with the Press Complaints Commission. The ownership group down in Florida is being called on the carpet and the presiding powers want me to rat out my former employers.”

“Uh-huh? So, let me repeat. What can I do for you?”

“Well, I was hoping that I could count on you to come down and put in a good word for me. Just so the committees know that I’m the sort of guy who admits when he’s wrong and tries to make it right, you know? A character reference as it were.”

“Dan. In the past several years since you were elevated from, what? Advertising manager to editor, you have printed no fewer than thirty outright lies about Swift Enterprises. Your willingness to publish non-facts and unsubstantiated drivel has probably cost us in the millions of dollars in lost good will and purchases. And —” Tom spoke up loudly as he heard Perkins taking a breath preparatory to interrupting, “even if this latest libel has been retracted, the original story was picked up by the wire services and got reprinted, but your apology and retraction stopped dead inside of Shopton’s city limits. Now you have the nerve to ask me to help you?”

“Yes.”

Tom was surprised and his voice showed it. “Huh? You came back with that one mighty fast, Dan. I’ll be quiet now and let you plead your case.”

Perkins replied, “No case to plead. I can’t even promise that it will never happen again, even with the *Bulletin* shut down. But, if I can’t get the two agencies to see that it is the owner’s group behind most of this, they will just repeat what they did in

Kenosha, Wisconsin. There, they shut down the paper after being caught lying about a local politician, but opened it up again under a new corporate name. A shell corporation. Same staff with a new editor but still under the same ownership thumbs.”

Tom considered his options. “Okay. Right now I’m prepping for a project that is going to have me swamped with work for a month or more. I can’t spare the time to sit around for a day. I’ll write up a letter and have it sent to the two agencies. I’m going to transfer you to my secretary. Give him the names and addresses and I’ll get it out this afternoon. Best I can do.”

The call ended with the editor promising to keep Enterprises informed about the results.

For two weeks Tom worked on the designs for one additional probe along with the ship he hoped to pilot into a wormhole. Assuming he could find a power source large enough and with a controllable level of non-destructive heat.

He knew that the probe would have to be more self-contained than anything he had sent into the one wormhole. And that meant it would be larger. Larger, of course, dictated a higher level of energy to get the hole open enough. For a brief time he wondered if it might be possible to just line up with the entrance and push an object hard enough to shove it in.

He poured over all of the data from the three probes to see if there was anything to support that hope. In fact, there appeared to be. Because he needed to reduce the laser output on the final probe so that it would not damage the optic fiber, the hole had partially closed. It had closed enough to be smaller than the actual fiber, yet the fiber had not been cut off or even trapped. It had slid slowly and steadily in and out even with the hole wanting to naturally become smaller.

It seemed to be a breakthrough.

“If it’s something that we can reproduce, Bud,” he told his friend as they were flying a quick test of a new engine setup for the SE-11, “I believe that all we need to do is to open the wormhole large enough to get the front of whatever we’re flying inside and then just keep shoving until it is all in. Kind of like what we experienced at the far end of the one hole.”

Bud nodded, tentatively, but asked, “So, if I get you, let’s say that the spacecraft you and I are in—” he checked his friend’s expression to see if he was still thinking along the lines of a manned mission, “—is pointed at the nose, you’re saying that all we have to do is get the wormhole open enough to let that nose in and then the rest will have no problems, even if the hole can’t be opened

any further?”

“I’m pretty sure that’s the case. I could send up the same probe as before with an increasingly thick optic fiber to check that, but I actually think that the next probe we send in, one our Hollywood lady is hopefully getting close to creating the camera for, will prove two points. First, that some sort of brief high energy pulse will open the hole as well as, or better than, a laser, and that just getting the pointed nose in will allow the rest of the probe to follow.”

“Sounds like a pretty tall order,” Bud told him.

Tom laughed. “Isn’t everything these days?”

They concentrated on testing the flight characteristics of the new engines. Where this first Toad had been outfitted with a succession of two and four engines in various configurations, they had always been mounted about a third of the way out on the wings. This new arrangement featured a trio of engines in a single, wide pod directly over the center point of the wings.

The V-shaped vertical stabilizers offered just enough space between them for the hot exhaust to push back yet only cause minor buffeting. Tom made a note on his tablet computer to see about moving them out a few inches to minimize that.

The three small engines had the same output as one of the original jet turbine engines, and about the same fuel consumption, but gave the jet a safety margin that both the FAA and the Canadian equivalent organizations demanded in any commercial aircraft below a certain size to be certified for flights over any body of water greater than twenty miles. This was a request from the brand new HOMES Air airline company. They intended to criss-cross all five of the Great Lakes providing services between about thirty small towns. The standard SE-11 was priced right for them, but would need to be flown below or above the lakes or along convoluted flight paths.

“She’s pretty stable,” Bud said as he performed a series of tight maneuvers. “Well, maybe a little sloppy on slip turns, but that’s to be expected with the engines so close together.”

They finished their flight and headed back to Enterprises, still discussing the possible manned spacecraft.

“I’m guessing this won’t be a bunch of us going out with lots of room and Chow coming along to feed us,” Bud ventured.

“No. Actually there is going to be barely enough room for two of us. I’m still considering it to be a one-man job. I know you’ll argue and puff and bluster, but I’m a better observer and you are a

better pilot. In this case, computers will make up for pilot skills but you can't get a computer to think at human level when it comes to investigating something you've never encountered before."

"Then, you'd better make it a two-man job, or have me tossed in jail because I won't let a married man take those risks all on his own."

After they touched down and parted to submit their separate notes on the test flight, Tom walked over to meet with Hank Sterling and Arv Hanson.

"What's that?" he inquired as they attempted to hide something behind themselves.

Hank looked at Arv and they both nodded. "Okay, it's a little something we've been working on. Arv and I downloaded the different designs you've been tinkering with for this spaceship, and we decided to morph them together and make a model of the results." He held out the ten-inch plastic piece.

Tom took it and turned it around and over in his hands. As he did, the two men were gratified to see a smile break out on his face. "I like it," he declared. "Walk me through it, please."

Hank took back the model. "Okay. Starting at the nose, we've given you enough room to mount an extremely powerful laser, or some other energy device, without the need to transfer it from the back where the reactor will sit. And, obviously, these windows are your front viewports. Arv suggested adding a couple up on the top to give you more direct view options. This section before you get to the radio antenna," he said pointing at a stubby piece sticking up from the main body, "would be equipment and stores, and just about everything else in the back is reactor and fuel storage for the main engines."

Tom looked carefully at the model for a moment before asking, "Why fuel? Why not repelatrions?"

Arv answered. "We weren't sure if you would have anything to push against, skipper."

Tom laughed heartily. "You have me there. Good thinking. The only thing I'm not to sure of are these long swept wings," he said pointing to the trio of appendages almost as wide as the craft was long.

Hank's face sort of scrunched up and he sucked air through his teeth. "Yeah. Those. We put those there for additional fuel storage without really thinking about getting them inside the wormhole. Then Arv suggested they could be swung back and trail along

behind until you got through. What do you think?”

“I’m not sure about those. For starters, if they are swung back behind, how do we use the engines without scorching them?”

Arv looked at Hanks in horror. “Oh, man. I never thought of that. Back to the drawing board!”

As he reached out to take the model, Tom pulled it away. “Not so fast.” He made a few suggestions that his pattern maker and model maker both agreed were excellent improvements. In the end, Tom suggested one final thing.

“Instead of having those small braking engines up on either side of the cockpit, why not just add ports to the front of the now stubby wings and redirect the engines through them. Fewer engines and piping to carry fuel that way.”

They agreed to that plus several other things Tom had mentioned earlier, and told him they would have a new model after the coming holiday weekend.

“Great! See you on Tuesday.”

Although technically only a Government holiday, all of the Swift companies took the following Monday off. For the time of year the weather was surprisingly good, so Tom, Bashalli, Sandy and Bud hopped aboard the senior Swifts’ thirty-six foot sailboat and headed down the western coast of Lake Carlopa. The boat was outfitted to sleep six, but their intent was to go as far south as possible by about one p.m. and then to return to the Shopton Yacht Club around dinnertime where they would have a pleasant meal.

Plans were spoiled when two speedboats, driven by unthinking teenagers, came roaring at them and raced in circles for more than two minutes. Tom put in a call to the sheriff’s water patrol and reported the boats and young drivers, but the damage was done. After the encounter with the armed gunman in Oswego, and Tom’s Builder’s Mart incident, neither of the ladies wished to continue their sail.

When they tied up back and their slip, a young deputy met them. He showed them pictures of two boats and five young teens.

“Are these the ones that surrounded you?”

Tom and Bud, who had taken the closest looks, nodded. “Yes. That’s them,” Bud stated. “I didn’t see that red-headed girl, but the two blonds and the two boys were sitting on the backs of their seats having a good laugh.”

“Was she in one of the boats?” Tom inquired.

“Yeah. Says she was sitting on the deck, sicker than a dog from all the spinning. They’ve been taken to the Sheriff’s Department and will have to explain to their parents why the two boats have been impounded.”

“Tom,” Bashalli began. “I feel better now, but I am not certain I want to have a heavy dinner tonight. Could we all not just go have a hamburger?”

Bud and Sandy agreed.

“Certainly. Flock of Burgers sound okay?” The restaurant and its sister dining spot, Herd of Chickens, were owned by the same man who had become a friend over the past couple of years. As popular with kids as they were with adults, the burger restaurant featured several dozen different burgers, one of which had been named in honor of Tom. It was an ostrich burger with a smooth cheese sauce and jalapeño slices.

After spending a few hours lounging around the nearby beach, they drove over to the small town of Thessaly, where they were warmly greeted by the owner, Artemis Rose.

“Tom, Bud, Sandy and the beautiful Bashalli. I read in the newspaper. Congratulations on becoming Mrs. Tom Swift! Say,” he said showing them to one of the best booths in the restaurant, “I’ve been tinkering with a few new ideas. Now I know you won’t take free food, but if I bring out a couple of my new burgers, cut into fours, will you all give me your opinions? I promise I’ll let you pay for them if you like them... and insist!”

The first turned out to be made from buffalo and turkey meats with small bits of bacon ground right into it. They unanimously declared it to be wonderful.

The second was made with chicken, turkey and a little elk meat. It featured a sauce made from sweet chili paste and mayonnaise. Bashalli’s eyes went wide and she almost could not take a second bite around her huge smile.

“Like that one?” Mr. Rose asked her with a smile.

She nodded vigorously. “I do. It is spectacular.”

“Then, consider it to be the Bashalli Burger!”

With Tom’s help she had another full Bashalli Burger while Tom ordered his namesake.

As they were leaving Bashalli walked up to Mr. Rose and kissed him on the cheek. “Thank you for the great honor, sir.”

He blushed and sputtered that it was “nothing,” but she just

shook her head.

“It is the second time in these past few months where I have been honored. Becoming Thomas’ wife was first and now this. Thank you.”

She and Tom parted ways with Bud and Sandy at Damon and Anne Swift’s home. Tom and his father talked for an hour while Bashalli and Anne compared recipes.

“You should see the model Hank and Arv put together. They took the best of three designs and came up with a good candidate. I realize that I haven’t come up with what to use to pry open the wormhole enough to get the ship inside, but I *am* certain that this ship is going to need a high output nuclear reactor. If I can give you the probable output do you have the time to come up with design?”

“Well, with any luck we’ll have something that can either be used as is or at least only lightly modified. Will you be using internal or exposed cooling?” He referred to whether the spaceship would have a totally self-contained cooling loop inside of the hull or whether Tom might consider saving space by dissipating heat from the cooling medium by the use of one or more external pipes. The exposure to the extreme cold would be more effective but might interfere with the sleekness of the craft.

“I want to do both,” Tom replied. He told his father about the forward-facing engine points in the rear winged area. “I won’t be using all the available space, so I believe we can run the external piping there.”

“The engine exhaust won’t be a problem?”

“Not the way I intend to position things.”

“Get me the power needs tomorrow and I’ll work on what we can do for your new ship.”

Tom and Bashalli said their goodnights and went home.

He had a troubled night and eventually got out of bed so that Bashalli could sleep. Sitting in the darkened living room he thought about what it might take to get a wormhole to open enough to allow a small craft to enter. Calling up some data from his tablet computer, Tom computed the amount of power necessary to open a hole of a diameter of his interstellar ship. It was tremendous.

So tremendous that he had a sudden understanding of the only possible solution.

Anti-matter!

It existed, briefly, and was known for the incredible release of energy when it came into contact with positive matter.

In some way, he was going to have to either capture and release it at will, or create negative matter on the fly sufficient to blow a hole open at one end of a wormhole!

CHAPTER 11 /

JUST HEAT, SHOVE AND VOILÀ!

EVERYTHING TOM read or learned from other scientists pointed at one unassailable fact. Creating anti-matter wasn't easy but it could be accomplished. In fact, it had been created many, many times. If Tom could find a way to shove X amount of anti-matter in front of a wormhole, it ought to react with the matter in the wormhole and open like a dental patient saying, "Ahhhhhh."

At the very least he could release both anti-matter along with an equal amount of matter from two points, have them converge right in front of the wormhole, and then take advantage of the automatic reaction.

All that was left was finding a way to create and use—on-the-fly—or store and release, that anti-matter.

His previous probes had used intense laser energy more like a primitive pry bar to open a minute hole to the incredible size of under half a millimeter. It was the same amount of laser energy that could burn through thin metals and all it had managed was to allow Tom's micro-thin optic probe to slip in. That wasn't going to be good enough.

Not by a long shot!

When he discussed his desire to experiment with anti-matter with his father, the older inventor offered to contact an acquaintance at the Fermilab in Illinois. He knew his contact had been involved in such studies for more than a decade.

Several calls were made before he managed to get connected to the man he knew. After explaining briefly that Tom was the lead on a new project, Damon turned the phone over to his son.

"Hello, Tom. Craig Peterson here. I understand from your dad that you're interested in one of my old friends, anti-matter."

"That's correct. I'm getting ready to perform some experiments in outer space having to do with wormholes and believe my best bet for getting a tiny one to open enough to slip into will be in using an incredible amount of energy, and the only thing I've come up with that can do that is anti-matter. What do you think?"

"I think that I'm retiring too early. Friday is my last day here. When we shut down our own Tevatron accelerator back a few years and transferred our experiments to Switzerland and the Large Hadron Collider, I knew it was a matter of time before

someone figured out they were paying an old duffer like me for doing nothing. But, to your question. First, I can say ‘Wow!’ followed by ‘Double wow!’ and then to tell you I wish I could be part of all this.”

“Sir. If your expertise can help me you might just get an invitation. So, do you think I stand a chance with this?”

“Well, let me see. I know nothing of wormholes so I begin by deferring to your knowledge. But, when it comes to a source of either instantaneous energy creation, or even using a steady stream to create a longer, steady pulse, you can’t do better. Not in this set of dimensions and at this point in history.”

Tom told him the amount of energy he needed to create, at least in theory.

There was silence at the other end. It lasted long enough Tom thought they might have been cut off, when Craig let out a long and low whistle. “Sorry about the silence, but I was just running a small calculation on that. You sure you want to hear the good and bad news?”

“I might as well. Give it to me in whatever order you believe makes sense.”

“Okay. The good news is that if you think you need that much energy, it can be handled with less than thirty grams of anti-matter. Just over one ounce. The bad news is that to contain that you will need to have a magnetic-controlled vacuumed environment powered at nearly one hundred megawatts. That is, if I remember correctly, the total output of the first of the older reactors at your own Citadel facility. Unless you plan to use a long extension cord, I don’t see how you can get that much power up in space.”

They talked for a few more minutes and Tom thanked him, but asked, “Can you tell me how I can go about getting enough anti-matter for a smaller-scale experiment. For the small probe I am going to build I suppose that, based on what you’ve just said, I need about point two grams.”

Geoff laughed. “Well, if you have a spare two million lying around we will gladly start the old girl up and make that for you. Make you a hundred grams if you want it. We even have a self-powered magnetic flask that can handle up to four grams for a period of four hours. After that it needs to be powered externally.” He laughed again.

When Tom didn’t join in, he ventured, “You probably *do* have a couple million dollars for this, don’t you?”

Tom replied cheerfully, "I may not have it today, but I am certain I can get it within the next two weeks. What do we need to do to make this happen?"

The rest of the discussion took several hours and the inclusion of seven people at Craig's end and Damon Swift at Enterprises' end. Craig's director told them it would require at least two weeks of cleaning and testing before the Tevatron accelerator could be turned on and run, and then another week or more to generate and store the desired anti-matter.

"I hope that you have an appreciation for how horrifically dangerous this stuff is, Mr. Swift. It makes nitro glycerin to be as dangerous as mouthwash, gram for gallon."

In the end, arrangements were made for the restart of the accelerator and a further request that it be kept ready should the test prove effective. If Tom's experiment worked, he would need at least two, or better yet three, chunks of anti-matter for his manned ship: one to get them through on the outbound trip, one for the return, and one spare.

Tom always took a spare when he had the room.

The very next thing Tom did was to get the construction of his new ship underway. There were numerous unanswered questions, but he knew it could be built starting from the nose back to the tail. If he ultimately required more room for engines, fuel, and the even larger reactor he now believed would be mandatory to provide the containment power, he could widen the back or make the ship longer. Within, of course, reason.

Based on the model, Hank Sterling had already created the main patterns for the front half of the ship. He knew that Tom might change the back so he had been holding off. Now, he went into high gear and began working with the schedulers at the Construction Company to get things underway.

The next morning as Tom entered the Communications building he was greeted by a slightly older red-haired man coming out.

"Oh, hey, Tom. I'm still in wonderland over getting to go out to Pluto with you. Thanks again."

"It was not only a pleasure, Michael, it was the best thing for the mission." They were talking about the young ex-Navy man having accompanied Tom and Bud on the *Sutter's* first mission out to find out what was going on with Pluto, and to mine some of the mineral wealth that had evidently been added to it by the Space Friends' "Masters." Michael had once applied to NASA to

become an astronaut but hadn't had the educational level they required. He now had been farther out in space than current NASA astronauts and could proudly hold his head up with the best of them.

Tom walked down the hall and used the security pad to enter a locked room. It was the place where all communications to and from the Space Friends happened. He sat down at the keyboard and typed in his outgoing message.

Swifts to Space Friends. Greetings. We believe there is a requirement for a visit to galactic anomaly located 13 light years distant from Earth to a collapsed star we call a BLACK HOLE. Are you familiar with this concept.

Theory by Earth science community is that numerous pathways exist for rapid travel between one point to another within our galaxy. Our reference is WORMHOLE. Are you familiar with this concept.

We plan to construct space ship to utilize a WORMHOLE to travel from near Earth out to examine BLACK HOLE.

Major inquiry: do you believe this to be possible. Do you have experience that can assist us.

Our gratitude for any information you can provide.

He read it over and pressed the send key. He might have made the prose a bit more flowery but even with all the recent improvements in their communications, he found that the shorter and more direct the message, the less possibility for mistakes or confusion.

Message sent, he sat back to see if an answer might come back quickly. Given the faster-than-light form of communication that had been made possible by a gift of their amazing, and possible partially-organic, transmitter/receivers, he knew it would be a matter of just a few seconds before the message was received.

In months gone by he might have left the room knowing that it would take hours or days for a response, but the times for most recent message had been amazingly quick. He was not surprised when a bell announced the arrival of an incoming message.

He watched the screen as first the typical mathematical and representational symbols and drawings appeared, which were quickly translated and displayed across the bottom of the screen.

**Space Friends to Swifts. Return of greetings.
We understand reference to BLACK HOLE.
We have attempted to study many such in
distant past. Our race has minor success
in close study with many scientists
perishing when they disappeared into
BLACK HOLE.**

Caution against close study imperative.

**We recognize something at your reference
distance but unsure if it is BLACK HOLE.
Our Masters will not concern themselves
with it at this time.**

**Regarding inquiry about travel through
object or possible rift. We know of many
very small positional entrances to an
inter dimensional area of space making
transport from one location to second
location possible.**

**We utilized such to arrive in your system
from our home system many years in
the past.**

**We are forbidden by Masters to provide you
with any data at the present time concerning
this, but we will inform you that very high
level of energy in frequency range**

...and at that point a lengthy formula appeared that was flashing in red indicating that it would require additional time to translate. The rest of the message continued:

**mandatory to force travel location to
open sufficiently to allow insertion of
space craft. Also be advised that each
WORMHOLE ends at a specific
location. Understanding of end point
is mandatory prior to undertaking
voyage.**

Well, he thought. That's something!

After asking the receptionist to buzz him once the full translation was complete, Tom headed to his underground lab and office. There he called up the notes and the private correspondence he had with several physicists over the past two years.

As he remembered, greater than half of them believed in the existence of wormholes and that travel inside of them was not only a supportable theory, at least one had told him that once inside it was his belief that the size of the entrance point didn't matter when juxtaposed to the size of the vessel. His letter ended with:

As long as you have sufficient energy to, for lack of a better term, pry open the entry, you should enter a realm that will expand to accommodate you. Of course, the larger the vessel (diameter being key in my belief rather than length or even mass) the greater the energy. And, I further believe that on reaching the exit point, that "hole" will expand automatically to let you out.

It was something Tom wanted to believe and something he felt he had partially proved with his optic fiber probe. If the theory held up, it would be the key in getting out to examine the anomaly quickly. But first, he would have to prove the theory and complete the small spaceship probe—unmanned, of course—to test it.

Now he needed to get serious about designing the new probe. Letting his imagination run free, Tom began doodling in a CAD program. An hour later he sat back and looked at what he had come up with.

He sucked in a breath through gritted teeth.

It looked like something out of a bad sci-fi comic book.

It was about twenty times longer than it was wide, so if it were ten feet long that would make it about six inches in diameter. He had made it flexible. Not because he had any data to show that the inside of a wormhole was bent and twisted and might require it; his earlier peeks indicated the opposite. Soon he could see he was going on the artistic concepts of many movie and television special effects teams.

His thought process had been less capricious than that, though. In his mind he wanted something that could be rigid when necessary and flexible if mandatory. If it were possible to stop inside a wormhole it might be advantageous to be able to twist and turn to examine the sides. The metal snake on his screen could give him that.

The more he considered it, the more changes he began to make. Soon, instead of looking like an articulated section of ventilation ducting, it took on the smooth-bodied appearance of a reptile.

Or, of a worm.

He sent the design to Hank Sterling for pattern making and fabrication, along with a note describing in broadest terms what he had in mind. The note ended with “?”

Three hours later as he was getting ready to go home to his wife the phone rang.

“Tom here.”

“And, Hank here,” came the reply. “Got your snake. Interesting to say the least. Do you think you can cram everything inside something that small to pull off this trick?”

“I’m hoping that you can give me maximum room by creating something with a skin that’s incredibly thin yet flexible yet strong. My thought is that any electro-reactive material that can be controlled is what we want. We already use some special alloys that are flexible and rollable, and then extend and stiffen them up with a little electricity.”

“Hmmm. True. The trick is going to be to find one or more that will give us the right kind of control,” Hank stated.

“And, I’ve got a notion about that,” Tom replied. “We create muscles. Follow me on this. If we have micro fine cables running from end to end, possibly attached at several strategic points, we should be able to pull in on one or more in one area while extending one or more in another location letting the entire thing bend.”

Hank was silent for a moment before he laughed. “Brilliant! I can see just how that is going to work. Give me a couple days and I’ll demo a prototype.”

Tom was thrilled even though such flexibility might not be required. He thanked Hank and went home.

Over the next two days he made numerous phone calls to some of the physicists he had corresponded with regarding wormholes. Craig Peterson with Fermilab called to tell him they needed an additional five days before start up, but that they were not charging anything more. He also received a second message from the Space Friends. It provided a little more information regarding the probable black hole telling Tom that their own observations indicated it was some type of unknown solar phenomena.

The thing that gave him the most joy was that the message also

included three complex formulas, that he realized pointed the way to the type and power of the energy needed to force open a wormhole.

When Hank called, Tom and Bud were discussing the lack of conclusive information the repositioned Hubble telescope had been providing.

“Skipper? Can you come over to see a demo?”

“Can I bring Bud?” Tom asked.

“Sure, but you have to make him promise no wisecracks, Okay?”

Tom sighed and looked at Bud. “Hank. You know that the only person who has that sort of control over our Bud is my sister, and she’s not here. Will you take him as he comes anyway?”

Hank laughed. “Fine. But at least ask him to not give my little toy any punny nickname.”

Before leaving for Hank’s workshop Tom told Bud about the request. “We don’t want to hurt Hank’s feelings, so be nice. You can always tell me what name you are going to give it after we leave.”

“I can do you one better. I’ve got an appointment to demonstrate that new configuration of the SE-11 to some bigwigs from that airline in ten minutes. You’ll have to go without me. But, be sure to tell Hank that I will not be stopped. At some point I *will* nickname whatever it is you are going to look at!”

When Tom arrived Hank was standing next to an open space holding a remote control that had most likely come from an airplane model. “If you are ready, skipper, stand over to the left and I’ll see if my new friend wants to come out to play.”

He flicked a switch on the remote and from around a nearby corner came an incredible sight. Silent except for a slight scraping sound as it moved across the cement floor, came a ten-foot bright red snake. It was an almost perfect tube for 95% of the length with a tapered Styrofoam cup on the front—onto which Hank had drawn eyes and a toothy mouth complete with vampire-like fangs—and at the back end he had attached a large baby’s rattle with electrician’s tape.

To Tom’s delight it glided across the floor in a believable snake-like slither stopping in front of them and raising up so that about forty percent of its body was in the air, and it was staring right at Tom’s midsection. To top things off, the tail rose and shook back and forth so that the rattle did precisely what it was designed for.

It took them several minutes to collect themselves and stop laughing.

Hank inquired, "Is this anything like you wanted, skipper?" and that set them both off again.

Finally, Tom sobered and nodded his head. "That's exactly like what I have in mind. Uhhh, how much room is the mechanics taking up?"

Rather than answering, Hank turned the remote off and reached down, unlatching a small door on the top of the "snake." Inside Tom could see almost nothing. His head shot up and he looked at Hank in amazement.

The engineer chuckled. "The battery is near the tail and takes up about three inches of the length, but everything else is self-contained in the quarter-inch skin. Other than that, my friend here is as hollow as Bud's stomach before lunch time!"

As Tom closely inspected the device, Hank told him about how he had made the inventor's suggestion come true. The overall length was divided into fifteen segments each one attached by an electro-reactive sinew and then to every second segment fore and aft. It meant a lot of overlap, but allowed the snake to smoothly wriggle and even coil up in an area just four feet across.

"Now, all I have to do is figure out how to get this thing into a wormhole and then back to us!" Tom stated.

Over the next week he worked feverishly to come up with the necessary circuitry and emitters to force open a wormhole. In the end he built a three-part system that was bolted to the outer deck of the *Challenger*. The first part was a trio of Tom's atomic power pods that would be strained to their limits just providing power to the second section.

That was all going to power the containment flask holding the anti-matter. Tom had specially created a custom container capable of holding a few grams of the explosively-interactive substance and one that could open at the front and give the anti-matter a "shove" out. If everything went to theory, it would not immediately be attracted to either the wormhole or back to the snake probe.

It should drift forward until it came to the wormhole. At that point a powerful blast of electrons from the emitter array on *Challenger* would cause it to release all of its energy and that, in a split second, ought to open the wormhole. The snake probe would already be surging forward and would enter the hole before it had the opportunity to close. The only thing left behind would be the

fiber optic data cable attached to the *Challenger* parked some thousand yards away.

“I hope a thousand feet is enough,” Tom told Hank. “If not, *Challenger* might not survive!”

CHAPTER 12 /

BUILDING A WORM RIDER

IT WAS incredibly small for what it was supposed to do and Bud stood there looking at the long and narrow flexible tube on Tom's workbench.

"That's what we're going out to test?" he asked in astonishment. "A solid Slinky?"

Tom had to laugh. "And here I thought you would come in and ask me who I was going to scare with just over nine feet of model snake. Seriously, this is it. I figure we can find any number of the small wormholes that theoretically exist a bit farther out than Mars. At least, that's what I believe until our Space Friends tell us otherwise."

Bud pointed to the tube. "That is going into a wormhole? How? I thought that the little glass fiber was about all you could shoehorn in. What's changed?"

Tom told him about his theories and about the anti-matter that would be used.

"This probe won't need to hold the actual anti-matter or energize it. That will all be performed by the *Challenger*. She'll have three extra power pods bolted down to the hangar's porch and the magnetic containment flask inside the hangar. We'll use a small robot pack to pick up the containment flask and take it to the hole, *Challenger* will fire a powerful energy beam into it causing the matter/anti-matter energy release, and the tube will shoot forward. If I have choreographed it right, the tube will go in trailing a communications tether and will travel the length of the wormhole."

"What happens when it gets to the end?"

"Theory says that it ought to just push out through the other side and give us a look at what's out there."

Bud scowled a little as he tried to come up with a few good questions. He enjoyed prodding his friend. Sometimes, the questions were fairly juvenile and Tom made him figure things out for himself, but there had been a few instances where the flier's inquiries had prompted the inventor to new lines of thought.

"So, then..." he said still trying to form a question, "this worm rider thing sort of pops out like a groundhog, sees something and then heads back in?"

A little sadly, Tom shook his head. "I'm afraid that it's going to be a one-way voyage for our... what did you call it?"

"Worm rider. Wormhole rider? I don't know. It sounds better than 'this tube thing.' At least to me."

Tom laughed. "I like it. *Worm Rider* it is. Anyway, our *Worm Rider* is going to be packed with all sorts of measuring devices and a camera to get a few photographs."

"I thought that Holly-weird lady was going to be making a video camera. What's happened with that?"

"Doesn't appear it is going to be ready. While it would be wonderful for this probe, that's really more for extended exploration of the insides of wormholes. Right now I just want to prove that the *Worm Rider* can not just travel through the hole but come out unharmed at the other end."

"Guess it wouldn't do to be able to get us inside only to be squashed down to little Tom and Bud pancakes, right?"

"Remind me to not let Bash invite you over for one of our hotcake Sundays," Tom told him. "But, yes. I don't want to be surprised at either end. I need to test the anti-matter approach to getting inside, using a solid rocket engine to move through it, and then just brute force to get back out the other end. If we fail at any point it's back to the drawing board. Although, now that I think of it we also need to test to see if wormholes are one way." His eyes went wide but quickly narrowed when Bud made a suggestion.

"Tow a little trailer inside behind old Wormy here attached to a pull-string. Drop it off just inside this end and try pulling it out."

Tom now grinned. "Out of the mouths of babes, Bud. It's an excellent suggestion. Tell Sandy she should give you two kisses out of petty cash."

Although he agreed with the concept of a trailer, Tom knew that anything coming in at the end of the *Worm Rider* might be subjected to the squeezing forces of the closing hole. So, he called on Hank and Arv Hanson and asked them to create a self-releasing "caboose" to attach seamlessly to the main body.

"It needs to be firmly attached until it releases. Tight seal and some sort of locking mechanism so that it can't be yanked off."

They looked at a quick sketch he had made and nodded. "You'll have it tomorrow," Arv promised, "as long as Hank can make the lock and release part."

"I've already got something in my inventory that should do the trick," the bigger man told them.

When demonstrated the following afternoon it functioned flawlessly. They brought along a tight elastic ring barely wide enough for the *Worm Rider's* body when stretched. As Tom watched, the two men clamped the ring to Tom's workbench in his large lab. They then picked up the probe tube with Arv commenting, "Here comes the *Worm Rider* and Friend, Mister ring. Open wide!"

They shoved the front end into the ring and gave it a steady push. Twenty seconds of hard work had the entire thing passed through and out the other side. Immediately on clearing the constricting band, the back five inches popped off and dropped to the bench top.

"And that, skipper, should be what you're looking for. Right?"

"Absolutely, Hank. How does it work?"

"A pressure sensor at the connection point activates as soon as it feels the squeeze. I have it set to release the back part in half a second after pressure stops, but it can be anything from about fifty milliseconds up to a full second. Your call."

Tom decided to leave it as currently set. "As long as it's easy to change, I may extend that time once we get into position."

He also asked for three clear tomasite view ports to be added to the head and a sealable mini-hatch near the edge of the "nose."

"I'll need one view port for the camera, one for an infrared spectrometer to scan inside the wormhole for chemical signatures, and one for a mini-RADAR system I'm putting together to map anything solid in there. The small hatch only needs to be a half-inch. I intend to scoop up any gases in there for analysis by one of the devices that will be back in the body."

They understood his needs and departed to make sure everything was designed and realized to his specifications.

As he walked back to his office, Tom began to wonder why the video camera system was so far behind the original schedule. He veered to the left and went to visit Beth Warner in her temporary office.

"Where's Ms. Warner?" he inquired when he found her office empty.

The group administrative associate rolled her eyes and sighed. "Gone. Left for California yesterday and said she'd try to be back by Friday. Honestly, Tom, she's practically never here!"

Now Tom sighed. Perhaps it had been a bad idea to bring her to Enterprises.

“Please leave her a message to contact me as soon as she calls in or gets back. Tell her that speaking to me is not an option. Thanks.” He turned and left the office and headed back to the shared office. After sitting down he drummed his fingers for several minutes trying to stop being annoyed. It was partly his fault for not keeping a tighter track on her progress.

The phone rang with some good news.

“Tom? Craig Peterson at Fermilab. We’ve got the first three grams of anti-matter for you. When can you take delivery?”

“That’s wonderful, Craig. Thanks for calling. I never received the specs for the plug on your containment flask. I want to make certain we can literally plug and go with things. Any idea what might have happened?”

“No, but I’ll email you those myself in about five minutes. It’s almost like a two-twenty-volt clothes dryer plug, but with one additional pin. The specs will give you the values. Can you call me once you’re ready to have me bring the stuff to you?”

“You make personal deliveries?” Tom asked, astonished.

Peterson explained that although frighteningly unsafe, anti-matter was not a regulated substance. There was no radiation hazard, and it contained no chemicals so it wasn’t even classified as an explosive.

“Now, that’s not to say that I’ll just pop it into my luggage. But, we do have a special steel case with extra batteries so I can take a private jet out to deliver it.”

Tom made the suggestion that Enterprises could send out a jet complete with a portable power supply and the proper plug, and bring both the containment package and him out. “You can take the grand tour and see what I intend to use this with. If all goes right I might even be able to show you parts of the forward section of the larger ship I intend to pilot into a wormhole. Of course, that’s dependent on this first test being a success, and in you folks being able to deliver three packs of thirty to thirty three grams of additional anti-matter.”

The scientist accepted Tom’s invitation. A few minutes after the call concluded Tom’s computer announced an incoming email with attachment. It was the three-page specifications document Craig Peterson had promised. It was so straightforward that Tom went down the hall to his large lab and built it himself.

After checking the status of the two nuclear power pods he generally kept in the lab, he opted for the slightly larger one. A phone call had arrangements made to have it transferred to one of

the smaller cargo jets. It would be more than sufficient to transport the dangerous cargo while Tom, his copilot—presumably Bud—and Dr. Peterson rode in comfort in the cockpit. After taking care of that he called back to Chicago and let the doctor know he could be there two days later.

“If you land at Midway I can have our truck waiting at the civilian aviation terminal by about noon if that is okay.”

Tom agreed that it would be fine.

As he anticipated, Bud was thrilled to go. “Is it possible to have a big Styrofoam cooler filled with ribs from my favorite joint delivered to the jet? I’ll even share some with you and Bash.”

“You make the call and have them at the C-A terminal no later than noon, and it’s a deal. We’ll take off at eight so we’ll be there plenty early.”

The flight to Chicago went smoothly with the jet arriving fifteen minutes ahead of their projected time. Tom followed the ground controller’s instructions to hold at the southwest end of the field until a commercial jet with a possible nose wheel problem could land. It turned out to be a false alarm so they were directed to cross the nearby runway and to move straight across to the general aviation terminal where a large space had been arranged for them.

It was only eleven-eighteen when they shut off the engines. The jet’s auxiliary power pod would give them plenty electricity to run ventilation and all standby systems. Bud hiked over to the terminal and went to find his rib connection. He returned ten minutes later riding on one of the ground vehicles normally used for luggage carts. He pulled out his wallet and gave the driver a twenty dollar bill, picked up his precious cooler, and marched over to the jet.

He arrived at the same time a panel van pulled up next to them and a man who would best be described as willowy climbed out of the passenger side and two men eased out of the side door.

While Bud stowed his personal cargo Tom exited and walked over to meet their guest.

Craig Peterson had a neatly clipped mustache and the bluest eyes Tom had ever seen outside of an ad for makeup in one of Sandy’s magazines. They shook hands and Craig introduced his companions. The container in the back of the van was almost four feet square and must have weighed quite a bit. It had a built-in collapsible set of wheels that dropped to the ground as the box was pulled straight out.

To Bud, now coming out to see if he could assist, it looked like the wheels on an ambulance gurney. More introductions were made and the case was quickly moved to the cargo jet and stowed in the middle of the cargo area.

“Ah. I see you did a very professional job on the connector, Tom. It fits like a dream. Give me one minute to check things... right. Great. We’ve got power and the field is stabilizing again. It usually dips to one side a few millimeters when there is a power changeover, but I see it is realigned. We’re good to go.”

He dismissed his assistants asking them to arrange to have someone meet him the following day at the same place and time. With the winds having shifted during their stay, Tom was directed to taxi directly to the main runway for immediate takeoff. In only two minutes after starting to move, they were in the air and climbing almost straight over the Chicago downtown.

The flight was smooth and quick. Once on the ground at Enterprises Bud roared off in one of the small electric runabouts employees used to get around the giant facility with his ribs.

Harlan was introduced to the doctor while the security detail made one final visual sweep of the area. A flatbed truck pulled along side of the cargo jet and loaded the power pod and containment case onto the back. It had been decided to store it all in the underground hangar where Tom’s *Sky Queen* normally resided. It had also been decided that in case of any accident, the giant jet should not be in the hangar. Neither would Tom be allowed down to his small lab and office in the interim.

Tom spent most of the rest of the day showing Craig around Enterprises. It was an eye-opening experience for him.

“Fermilab is fairly open with a canal to one side and our accelerator build to surround a cooling pond. Lots of open space outside, but inside any building things are pretty cramped.” He now laughed. “Where your Administration building has that incredibly wide corridor with the moving walkway down the middle, we would have to put up with a three-foot hall and a row of cubicles taking up the rest. Small cubicles at that. Ah, well. You do things that make money and we do things that eat it.”

Rather than dine with all the Swifts that evening he asked to borrow a car. “I have an aunt in Queensbury. If you don’t mind—”

“No. Go have fun. I’ll make certain the gate lets you back in. Let me show you the guest quarters before you go and get a room assigned.”

With that accomplished, the happy doctor headed out for

dinner and an evening with his relative.

The following morning Tom was going to be too busy so Bud offered to fly Dr. Peterson back to Chicago. “Can I take the Toad?”

“As long as the Propulsion Engineering folks haven’t started another engine swap. Go ahead!”

It turned out to be a very full day and Tom arrived home after nine. Bashalli kissed him, gave him a light snack to eat while she ran a bath for him, and then climbed into bed and snuggled until he fell soundly asleep.

With only a few days to go before the first batch of components would be lofted into space and the new ship would start construction, Tom was busy trying to keep everything on schedule and was working long hours. Bashalli had been dutifully keeping him fed and rested at home while Chow took over food duties at work. The only relaxation Tom was getting was doing crossword puzzles from a book he had ordered on the Internet.

He started one each morning and tried to finish it before going to sleep that night. This morning he was startled out of his pondering on **7 Across** by a knock on the front door. Looking around he found that his wife was not in the kitchen, so he got up and went to the front room. He checked the monitor to see who it might be.

“Yes?” he asked after seeing a young boy standing there. “Can I help you?”

“Here, Mr. Swift. I was told to deliver this.” He handed Tom a rolled up newspaper. After removing the rubber band and unrolling it, Tom was shocked to see that it was a brand new edition of the *Shopton Bulletin*.

“What’s this?” he asked the kid.

“Don’t know. They just called me and told me to restart my paper route today. Bye!” With that he raced down the walkway, hopped on his bike and pedaled away.

Tom returned to the kitchen and laid the paper on the table. As he read the headline his eyes blazed and he could feel the heat rise up his neck and face.

SWIFTS BRING RUIN TO FAMOUS PUBLISHERS

“I Never Liked Their Editor” claims Tom Swift!

“That son of b—” he began but felt Bashalli’s hands resting on his shoulders. He was so furious he didn’t even glance at the article as he shoved the pages onto the floor.

“What is it, Thomas?” she asked.

Picking the front section back up and pointing at the headline he replied, “That snake in the grass Dan Perkins is getting back at me. I heard that the *Bulletin* was going back into publication, but this is just too much!”

He got up and grabbed the telephone. Dialing the number he had called far too many times in the past he barked out, “Get me Perkins. Now!”

Even Bashalli was taken aback by his anger. She decided to leave the room until he had finished the call.

“This is Dan Perkins. Who is calling?”

“You know darned well who this is, *Mr. Perkins*. What the... what is this? Did I write that letter and help you get your job back only to be stabbed in the back by you? When Swift Enterprises’ Legal team gets finished with you—”

“Oh, dear. Oh, Tom, I’ve made a horrible misjudgment. Didn’t you read the entire article? It sounds like you must have just read the headlines. Oh, dear. Please take a few breaths while I explain. You see, or you will see once you open to page two, that it is a special, one-off printing that only you received.”

Tom practically ripped the page open and stared at the two words that were all that had been printed on the second page:

Just Kidding

Page three was blank with a personal letter taped to it. Tom read it:

Dear Tom,

Between your letter and my testimony, the publishing group has been ordered to disband and to sell off all of its media assets. Although this fact probably will not be published, they were found to be in gross disregard for public safety and interest and guilty on more than one hundred complaints of libel. Too many counts to count in all.

*The upshot of it is that I have been allowed to temporarily put the *Bulletin* back on the streets pending an attempt to buy the paper.*

The sub head on the front page is me taking a shot at myself in your name. Forgive me, but I probably deserve it.

I thank you for not coming right down here and killing me.

Sincerely,

Daniel Perkins

Tom picked up the receiver and said just three words before hanging up.

“Welcome back, Dan!”

“Pleasant chat?” Bashalli asked from the doorway.

Tom spun around and motioned for her to come over. She eased herself into his lap and put her arms around his neck. “I love you, Tom Swift.”

“And, I love you, Bashalli Swift!”

Tom left a little late for work.

By noon he was ready to call a department meeting. The new ship was being built in sections and ferried up to the Outpost where they, like part of the *Sutter* before them, would be assembled. Fortunately, in between its flights up and back to retrieve the containers of ore and precious metals currently being mined on the newly repositioned Pluto, Toms ore shuttle rocket could be utilized to lift everything into orbit and unload in the vicinity of the Outpost.

In all, he planned on it taking seven trips with the final two being to carry both the highly-compressed fuel as well as the large amount of liquid helium that would be required to cool the equipment necessary to force open a wormhole.

“Status report,” he requested once everyone had assembled around the conference table in the shared office. With Mr. Swift on a one-day trip out to The Citadel he thought it best to have the comfortable room used for the meeting.

One by one the men and women of the six departments made their reports.

Propulsion was right on schedule.

Structure and ship components was a day ahead of schedule.

Launch management for the repurposed ore shuttle reported that they were running a few days late. “Sorry, skipper,” that manager apologized. “The *Gabby Hayes* needs a little extra internal support structure than we previously thought. We need to have it to attach the various cradles and braces for each load.”

Tom nodded and made a note. As he looked up, the launch management man added, “but I believe we have a plan to get us to within only one day of lag. If you and your father can authorize two night shifts—one this week and the other next week—we can do a lot of catch up.”

“Fine. Unless you hear different from me or dad, consider it approved!”

The next three departments all reported on- or near-on-time status.

Finally, Tom turned to the manager of the group responsible for the incredible machinery being constructed to open a gateway and to move the ship through the wormhole.

“We’ve hit on a potential problem, Tom. While the theory is fine, it’s going to be the execution we’re nervous about.” Tom asked him to explain. “Well, your tests show that wormholes go from one defined point to a second point, the exit. The issue is that we now know from the small test probe that the entrance points are not stationary. But, do the exits point only move that much or could they can move by millions of miles. Maybe even more. We just don’t have the data. Our fear is that by the time the proper entrance is located, the exit might move into a dangerous position.”

Hank Sterling asked, “Like what, Bill?”

“Well, like so close to a star that the gravitational pull would rip the ship out of the exit point and suck it into the inferno!”

They all sat there thinking about what had just been said. Tom looked around the group.

“Okay, then we have to add the optic probe capabilities to the ship. We’ll look into and beyond as many holes as necessary to find the best one. The one that will ensure our safety.”

CHAPTER 13 /

THREE POINT FIVE—D

IN THE previous month, Beth Warner—the video expert—had been flying back and forth from her work at Enterprises and her real job out in Hollywood. Things seemed to be getting a little out of hand so Tom cornered her on a Friday afternoon before she could leave for the airport.

“Ms. Warner? Beth? We need to talk.”

She turned slightly pale. Tom was fairly certain why. Even he had heard the rumors of her lack of progress while being compensated at a fairly high rate for her work. It was obvious that she was feeling a great deal of pressure. Plus, she had not contacted him as he had requested.

Tom suggested that they take a walk around the various buildings that made up the central area of Enterprises.

“Umm, I guess so,” she tentatively replied, biting her lower lip.

As they strolled between the Photonics and Propulsion Engineering buildings he got to the point. “You haven’t been keeping me up to date of your progress. Normally I’d take an employee to task and make addressing that sort of problem a work goal, something they would be measured against the next time a review happened. In your case I can’t put that sort of pressure on you. So, I must resort to simply asking for your cooperation.”

Beth didn’t say anything for a minute. As they walked Tom could see that she was struggling with something. When they passed one of the small exercise stations along the path she stopped.

“I’m sorry. I’ve taken on much more than I thought. I have to keep all of my clients in the movie and TV industries happy or else I might as well close up shop. Your folks have been amazing and I couldn’t hope for better people and talents. But, I’m close to having a breakdown. I’m sorry—” and she bent over, sobbing.

He stood next to her for about half a minute before reaching over and easing her to a standing position by her shoulders.

Mascara was running down her cheeks and her eyes were now ringed like a raccoon’s face. He could not help himself and began laughing.

She stopped sobbing and started at him. It only served to give her more of a raccoon look and he laughed even harder. Now,

Beth Warner was angry. How dare this young man laugh at her? She yanked a handkerchief from her purse so forcefully that her makeup compact flew out and hit Tom in the chest.

That caused even more laughter. He stooped over to pick it up and she contemplated kicking him in the face. He stood back up, unscathed, and handed her the compact. Between now and then wheezing chuckles he told her, “You need to do a little repair.”

She snapped the makeup open, took one look at her face and broke into gales of laughter.

They made their way over to one of the benches and sat down. It took a few more minutes to collect themselves before Tom apologized.

“Forget it,” she responded. “I’m the one who should be saying that. Here you trusted me to help you and I’ve all but let you down. I’ll arrange to return everything you’ve paid me.” She looked at the ground in front of them, before adding, “I just wish that I could have two weeks of uninterrupted time to devote to you. Misty is a nice enough girl, but I’m spending more time managing her long distance than I do when I’m there. Everything is an emergency to her. Nothing can go on without her calling to tell me about it.” She seemed to have run out of breath.

Tom patted her on the knee, saying, “If it’s a matter of just running a front office and prioritizing everything—even making a few minor decisions—I think I have someone I can lend you. But, only as long as you make it absolutely clear to Misty that she is reporting to him and not phoning you, and that all of your other projects take up no more than one hour a day. Deal?”

She was taken aback. “But, I thought you’d want me to pack up and get out. How badly did I misread that?”

Tom laughed and smiled at the frazzled woman. “My father and I share a secretary, Munford Trent, who is both the heart and soul of control over the entire administration of this company, but he is also incredibly overdue for vacation. By something like four years. I think I can get him to agree to make it a two-week working vacation. He will never just take empty time off. What do you say?”

She nodded and leaned over, giving the young inventor a tiny peck on the cheek. “Thank you,” she whispered.

Trent was dubious at first—Tom made the mistake of saying the word “vacation”—but Mr. Swift came to the rescue and explained the situation. “So, for two weeks, beginning Monday, you would be running ISCW.”

“What in the world does that stand for?” Trent inquired.

Tom replied, “Incredibly Small Camera Works. She specializes in miniature cameras operating in incredibly small sets. If you’ve seen any of the recent Agent Greene movies, most of the bits with aerial chase scenes through cities or ski chases or skyscrapers being demolished are her work.”

Trent sighed. “I suppose I could rent one tonight to see what you are talking about.” He sighed again. “Does this girl working for her understand that whatever I say goes? Not that I’m going to be rude or cruel, but I will not accept anything less than her cooperation.”

“Done,” Tom promised, hoping that Beth was arranging this at the present time.

Trent flew out from Shopton Regional Airport at noon on Sunday and took an early afternoon flight from Boston to Los Angeles.

Bright and early on Monday Tom and Beth Warner met with the managers of the departments with which she had been working. They accepted her apologies for the frustrating past weeks and her promise of her total attention.

“If you’ve loosed Munford Trent in your office,” one of the Photonics people told her, “then it’s likely you will get back there to find that everything has been organized to the nth degree and that you have fifteen new accounts lined up!”

Tom left them discussing the small levels of progress she had made and walked over to the cafeteria.

He was surprised to find Chow standing in the middle of the serving area, a meat juice-splattered apron around his waist, and the largest ladle Tom had ever seen pressed to his lips. After taking a sip of the contents and smacking his lips he noticed Tom.

With a huge grin he came out the side door and greeted his favorite person in the world. “Howdy, Tom! How’re ya doin’?”

Tom stepped back and admired Chow’s waistline. “Wow! You’ve really gotten serious about this slimming program, haven’t you?”

The westerner beamed. “Right purty, ain’t I?” Now, he laughed. “Jest kiddin’. Actually, I’ve dropped ‘bout fifty-three pounds in the past five months. Purty soon I’ll be back to fightin’ trim.”

At the age of somewhere around fifty-two, Chow was still a relatively young and powerful man, but his love of food had seen his belly grow and his weight go up by nearly one hundred pounds

since he arrived at Enterprises five years earlier. Now, he was on a program of diet and exercise that Doc Simpson helped him with, and the results were undeniable.

“Got ta where I can walk up ta seven miles without stoppin’ fer more’n a cup o’ water. I can even do that joggin’ thing fer ten minutes at a time. All I’m hopin’ is that I can come along with ya on more adventures and not be a hin-drance.”

“Chow, you’ve never been a hindrance. But, say, isn’t that one of your old shirts?” It was one Tom remembered from at least three years earlier.

“Shore is. Now I can fit in most o’ my old wardrobe. So, what can I fix ya fer eats?”

Tom asked for one of the cooks rightfully famous breakfast burritos.

“Sausage or bacon... or a little o’ both?”

Tom opted for sausage and the cook walked away to fill the order. Tom had to laugh as he realized that Chow wasn’t “waddling” any more. His gait was steadier and more determined than ever. Tom liked the new Chow Winkler!

As he was finishing his food, his TeleVoc beeped. He tapped the collar pin and mouthed, “Tom here.”

“Tom? It’s Beth Warner. Wow. This little gadget really works. Anyway, I wanted to call to thank you for giving me another chance and to tell you that I think we’ve come up with a breakthrough!”

Tom was stunned. He had left her and the others just forty minutes earlier. “I’ll be in my office in five minutes. Can you come see me?”

“Absolutely,” she replied before the connection was broken.

Tom had just finished saying good morning to Trent’s temporary replacement, Millie Roberts, when he heard the sounds of someone running down the ride-walk in the corridor.

Beth was so excited that she overshot the office and had to slow to a walk and jump off about fifty feet down the hall. She came quickly back to the office alcove and smiled at Tom.

“Come in and tell me what you’ve got.”

Inside, she opened her large purse and extracted a bundle of pages. Handing them to him, she suggested that he take a look and then she would explain.

As he looked at several diagrams and read the notes, he could see where she had made changes to both, presumably just that morning. When he finished, he looked up. “Okay, give me the story.”

“Well, I was so scattered that I didn’t realize that I had made a cardinal mistake. I discarded several possibilities early on and never came back to them. I seem to recall an article you wrote two years ago about the invention process where you berated yourself for making that very mistake.” She blushed. “Anyway, I started out on the premise that a simple lens system, even with your incredible image enhancement system, wasn’t going to buy me anything. All of my small micro-ground lenses are only good out to about five feet of focus. I looked for ways to use sounds, lasers, alternate light sources... a bunch of things. Nothing seemed to work to give me a clear view.”

“What changed?” Tom asked, now sitting back in one of the large leather chairs at the conference area.

Beth looked embarrassed. She reached out and separated the pages that sat on the low table. Pointing at two of them she answered, “Accepting the fact that nothing was going to work. Not by itself, that is. Oh, I knew that early on, but I had completely discounted that small note on page, uhhh, six.” She tapped the spot and he leaned forward to read it. He grinned.

“See? I wasn’t taking into consideration that you already have a look inside. A look that, now I have woken up and splashed a little reality in my face, can be used to process the images of a combination laser and, if you can believe it, audio echo!”

She explained that a moderately wide laser beam scanning back and forth at thousands of times per second, provided imaging information for anything reflective, even if it had very little substance. The audio echo—similar to sonar but using a wide spectrum of sound waves—backed up the laser information and added greater detail of solid matter information.

“The tricky thing is that there’s no way to get actual audio out the end of a cable the thickness you have given me. So, I’m using a second laser light type to transmit the audio information. One of your photonics guys, Walt, told me about experiments they’ve done assembling and projecting noise using light. It isn’t loud but it seems to be very effective.”

“And my modified SuperSight? Where does that come in, and how does any existing info we have help?”

She smiled and wiggled her eyebrows. “It starts with having that older info in the computers. Because the pictures your probes

took give a good idea of what colors are inside, I am certain we can map against that, adjust to it, and then enhance everything quickly enough to give you perhaps twelve or fifteen frames per second. It's not full-motion video, but it has one huge advantage." She looked at him as if daring the next question.

Finally, Tom asked, "That is...?"

"Multi-dimensional video. Of course we'll have to swap out the flat monitor for a 3-D one, and use special glasses even though those usually aren't necessary these days, and voila! 3-D plus."

"Plus?"

"Yes. 3-D video plus enough texture mapping that the picture can be moved around to let you look behind things. One source with many evident points of view!"

"If I understand that, you mean the point of view can be changed." When she nodded, he asked, "By how much?"

"If the actual view point were at the top of a globe, the perceived points could potentially be anywhere around the globe down to about the fiftieth parallel. Of course, the closer the thing you want to see around, the farther around you can see. Distant objects don't get advantageous angles."

Tom gulped. "And, you came up with that in forty-five minutes or less?"

Beth smiled. "It was there all along. I was just too harried to see it. You really have an amazing team here. They just looked at my scattered notes and stuff and put their heads together and asked me a few questions." She shrugged as if to say, *It just happened!*

She promised to have a working model of the system ready by the end of the week. For his part she asked Tom to assist with some of the algorithms for the computer system, and he readily agreed.

Tom was excited about the potential for Beth's 3.5-D system, as she called it, but realized that it was only one step. While it would be exciting and an important step to see and possibly understand the dynamics inside a wormhole, it was only the start of the story.

As much as he wanted to explore wormholes, he wanted even more to go through one and out the other end. And, assuming that he could find one that exited where he wished to go, he knew it was most important of all to see what the anomaly out near Luyten's Star was and determine if it was a potential threat to the Earth.

He checked his watch. It was too early to call the chief

astronomer at the Keck Observatory in Hawaii, but it wasn't too early to see if Dr. Reisberson might be able to provide a little insight. He asked Millie to check with Megascope scheduling for the doctor's contact information.

"Oh, if you mean Ronald Reisberson, he's associated with Cal Tech. My nephew goes there and had taken several courses from him. Would it be the same man?"

Tom laughed as he agreed it probably was. *Here I thought that Trent was a miracle of information!*

The call caught the professor just entering his office. "Tom. How very nice to speak to you. And, I must thank you for the extra time with your space scope. I'm the envy of my peers and yet I can't crow about it as I still consider it to be top secret. What might I do for you?"

Tom explained. "As you know, the anomaly is located beyond Luyten's Star. I am attempting to assess potential consequences of it being there, and what it might do to the nearby solar system or to our own. To tell the truth, I've found about five paragraphs that seem to be used over and over on the Internet, and not much more. It tells me that our Sun and Luyten's have already made their closest point of approach and that we are moving apart."

"That is, as I recall, correct. We are perhaps one-tenth of a light year farther away today than when Earth had its last major meteor impact more than thirteen thousand years ago. They are not, of course, connected."

"No. Of course. So, if we are moving apart, do you think that anything attracted to Luyten's, such as a possible black hole, might also be traveling away?"

"Whew! You don't ask the easy questions," Reisberson said after a slight pause. "I would have to say that my own personal theory would indicate that anything farther out along this arm of our little galaxy than we are must be moving away based on the physics of a spiraling object. If we assume the Milky Way is a true spiral—and since we can't get above the plane to check that we must make the assumption—then it can only be so if it is turning. Turning dictates motion and motion indicates an outward force. Too much?"

"Not yet," Tom assured him.

"Fine. That is born out by our understanding that everything in that direction is, indeed, moving away. It would be incredibly against both logic and physics to say that any anomaly would be doing otherwise, but we do not understand enough about black

holes. If it is attracted to Luyten's Star, that means it could travel against the flow, so to speak, to swallow it. If it is a black hole it will be too dense to be attracted to Luyten's. It will draw the star in. Everything might be moving toward it faster and faster than we realize. We do not have enough observational data to know."

Tom thanked him and hung up more determined to find a way to travel through a wormhole to see the black hole for himself.

* * * * *

Bud looked into Sandy's eyes. Holding her, he could feel her entire body vibrating with excitement. Or, nerves. Whatever it was, she was looking back at him as if searching for an answer.

"You know, we've been together for over four years." She nodded. "And, in all that time I've never wanted to be with another girl. I don't mind joking around with them, but I could never see myself holding onto someone else."

Sandy placed her head against his chest. She could hear his heart pounding, which surprised her as her own heart was banging away like a giant bass drum. *Oh, god. This is it!* she thought shuddering a little.

"Oh, gee. Are you cold?" Bud asked.

"No, just trying to keep myself together. Continue what you were saying before I faint."

"I love you, Sandy Swift. My life doesn't feel complete when we're not together. A very wise man recently told me that if I had an empty space inside and that you fit it exactly, we are meant to be together. I'll say it again... I love you, Sandra Swift. Always have. I had a little thing for a movie actress once, but I hit ten and that passed. Besides, she was already an old woman by then and some sort of big cheese with the U.N. That's what I get for falling for Shirley Temple."

Sandy began squeezing him so tightly that it began hurting. He got the message.

"Okay. Back to the 'I love you.' I do. And, with Tom and me getting ready to head off for our little trip I want to ask you to marry me." He was about to add something but ended up with his arms full of Sandy Swift who was attempting to laugh, cry, dance and kiss him all at once.

It took more than ten minutes for her to compose herself enough to tell him, "No."

Bud's stomach fell through the floor. Darkness swam around his eyes and he had to sit down on the floor. Looking up he

repeated her answer. “No?”

Sandy sat down on his lap facing him, her legs around his waist. She kissed him again and she held his head in her hands. “I will not marry you until you come back and ask me at a time when some will-he or won’t-he-get-back mission isn’t staring you right down the throat. Then, the answer will be yes, yes, yes. I promise. No, I swear. I also swear that if you don’t come back pronto, I’ll be joining Bashi in coming out there after you and Tom, and dragging you back to the altar. Capisce?”

“Si, amore mio. I gotcha!”

CHAPTER 14 /

IT COMES TOGETHER

WITH THE amazing 3.5-D camera system built, Tom completed work on installing all of the other instrumentation in the *Worm Rider*. There were a great number of possible sensors and devices he might add if the probe were about five times its current length, but he concentrated on those that fit. One change he made was to the “caboose” of the probe.

Where it had begun life as a five-inch empty container, he quickly realized that it could be used to house the initial source of thrust to get the probe into the wormhole. He requested that Hank and Arv extend it to about eleven inches. “I want to turn it into a pressure tank,” he told them. “We’ll use highly compressed nitrogen and a quick release valve to shove the probe forward. I have the feeling that once the hole tightens back up that it will act like a brake on the tether. So, I am thinking that we go for setting the separation for about one full second.”

Arv looked puzzled, and asked, “Why that time, Tom?”

“Mainly because I have calculated that will let the probe get in and separate while there is still some forward speed. Then, we use a better-controlled release of a liquid mono-propellant to fire up the small engine and travel at a fairly leisurely pace to the far end. I want to give the new camera system time to video the entire wormhole for future study.”

The two men left with individual orders. Arv would form the new tail tank and Hank would provide the valve system and setting of the release latch.

Tom continued his work on installing the various systems. The only one missing by the following day was Beth Warner’s camera system. When he called her to inquire he was told that she had left the office minutes earlier. He sat back and let out a long exhalation through his nose as he tried to tell himself that she would come through.

Millie knocked on the big office door and poked her head through. “Can you see someone?” she asked.

Tom nodded. Whoever it was would help take his mind off the tardy camera system and missing video expert. He practically jumped from his chair when Beth came through the door. She was holding a small satchel.

“Finished!” she announced setting the bag gently on his desk.

“I had to work all night to get it done and tested, but it works like a champ. Take a look,” she invited.

He opened the top of the bag and carefully extracted a three-part device. As he examined it she explained, “The front part is obviously the lens system. But the visual lens only takes up the center fifty percent. The ring around it is the electro-magnetic send and receive antenna—basically my version of a RADAR—and the entire outer ring also acts as the sound emitter and receiver for that function. The vibrations won’t effect the RADAR signals, and I’ve isolated the center lens so it also isn’t effected.”

Tom was amazed; the entire “head” unit was just one inch across and about five inches long. He had told her she could have as much as ten inches inside the body.

Next she pointed at a square box attached by an electrical flat cable. “That is the circuitry to give me the audio and RADAR outputs, and that final slightly smaller box is the receiver and processing stuff. All that gets plugged into the data tether that will go back to the ship. So, what do you think?” she asked with a hopeful smile.

“It looks great, but have you tested it?” he asked.

She reached into her satchel and pulled out a thin plastic case. “Yep. The folks over in Photonics built a test tunnel with adjustable lights and various obstructions similar to those in the photos your first probe took. Take a look at the results.

Tom pushed the DVD into his computer and they were soon watching a five-minute video. It not only showed crystal clear results, but the demo of the moveable perceived viewpoint was noting short of astounding. When it was over, Tom rose and gave Beth a hug.

“Thank you for not bailing of us when things got a little rough back in California. As soon as our mission is over, we will help you get the patent on this.”

“Oh!” she was surprised by the offer. “I figured that since I did this on your dime, that you’d—” She stopped as he began shaking his head.

“All that we ask is to be allowed to use and reproduce this for our own purposes. What you do with the design is up to you. Now, I have an invitation for you before you head back to your own company. Want to come up with us to take a visual tour of a wormhole?”

Her mouth was still agape when she left five minutes later after nodding her desire to do just that.

On Sunday, three days later, Tom and a small team climbed aboard the *Challenger* out on Fearing Island and headed skyward. It would take the known five days to get to the wormhole field and Beth spent a lot of the time fine tuning the camera capabilities, and working with Tom to complete the computer programming.

The large ship parked near one of the minute energy voids Tom now associated with wormhole activity. The *Worm Rider* was manually carried out from the hangar by Bud and Hank and moved to a location about ten feet from the hole. Once they were safely back inside, Tom released the robotic rocket pack that would be performing the final probe placement.

Looking a bit like a crab with four dangling legs, it positioned itself over the probe and the legs closed in to lightly grab it. Moments later it was finished with the task and the “crab” came back to the *Challenger*. When it reappeared it was holding the containment flask with the anti-matter. Under Tom’s skilled guidance it parked and released the container to the right side of the hole with the exit pointing right at it.

Again, the little robot hurried back to the ship.

“Time to power up the electron beamer,” Tom announced. The device was mounted just inside the hangar on an extendable track system. Now that it was positioned outside the ship, Tom energized it. As the power built up, they could all feel a slight throbbing running throughout the ship. “Fifty percent power,” he announced. Half a minute later he told them, “Seventy percent. Hank? Make the final adjustments to the probe position, if necessary. We’re just passing eighty percent power.”

Hank quickly called out, “Everything is green. We’re good to go.”

“Ninety-five percent power. Get ready. Releasing the anti-matter. Everyone put on those dark glasses because... here... we... go!”

A brilliant shaft of light appeared between the ship and the probe. There was a bright flash and then nothing. When their eyes adjusted the little containment flask was gone as was the *Worm Rider*. However, to Tom’s relief they could see the trailing tether as it disappeared into nothingness.

All eyes turned to look at the 3-D monitor. Even without the special glasses they were treated to an amazing sight. Only Bud spoiled the mood by announcing that it looked like a medical procedure his father had undergone when he turned fifty.

There was little time to celebrate before Tom told them, “I’m

pulling out the back end now.” A cheer went up as the small section of the *Worm Rider* suddenly appeared as if by magic. A close visual inspection was performed by drawing it closer to the *Challenger*. It showed no signs of damage or disfiguration from the anti-matter energy release.

Tom began piloting the probe through the tunnel. Red Jones called out the amount of cable being reeled into the hole. “Fifty feet, skipper. Getting a little resistance. No more than a child’s grip might exert, though.”

Ten minutes later Red announced that they had just reached the two hundred foot mark.

“Thanks, Red,” Tom told him. “It looks like we’re coming to the end of the tunnel. What does your RADAR range say, Beth?”

She was surprised to be asked for information and so she stumbled through getting the results. In the end she replied, “about twenty feet, Tom.”

“Get ready, folks. We’re going to poke the nose out.” He eased the probe forward until they could tell it had bumped into the far end. Giving the rocket a little more throttle, Tom got the nose outside. He shut off the small engine, only to have the bright picture change back to a view of the inside of the wormhole. “That’s strange,” he muttered. He moved the probe forward again and pushed the nose out of the hole, but as soon as he let off on the power it was sucked right back into the wormhole.

“It doesn’t want to let old Wormie go,” Bud said.

“If that’s the case, then I have to add another feature of wormholes. Once you’re inside, or perhaps even partially inside, they tend to pull you all the way. Interesting!” He applied more thrust and shoved the entire probe out of the wormhole.

“Oh... my... god!” he said almost breathlessly. “Look at that!”

As Tom and everyone else in the control room watched the video they could plainly see a blue dwarf star that was flinging off enormous amounts of solar matter almost directly ahead of the probe. Without instruments to measure the vast distances it was impossible to gauge the actual range, but Tom told everyone that the wormhole must exit within about fifty million miles of the star.

“And that tells me we need to be ultra cautious about which wormhole we enter,” he stated just as a blinding lick of solar ejecta swept across the *Worm Rider* and incinerated it in milliseconds.

The tether was withdrawn and examined as they raced back to Earth. The end was melted and rounded like the end of a nylon

rope that had been sealed using a blowtorch.

When they landed Tom thanked everyone, but especially Beth Warner. “Without your camera system we would not have been able to see what’s going on inside, and would never have had the chance to video that star. Sorry it had to be sacrificed.”

Ten days had gone by and Beth was overdue to go back to her life and work in Hollywood. Red offered to fly her back and to pick up Munford Trent that evening.

To Beth’s amazement, she returned to her office to find an incredibly different, methodical and polite Misty, and an office that had been more organized than she ever believed possible.

For his part, and although he would not admit it, everyone could see the satisfaction Trent felt about his recent *working* vacation.

Tom and Bud were sitting in the cafeteria enjoying a pleasant conversation Wednesday morning and some coffee when then both felt a presence behind them. Turning, Tom saw his Chief of Security standing there.

“Pull up a cup and sit down, Harlan,” he suggested.

“I’m going to do exactly that. Give me a minute.” Having said that, he walked across the room to the beverage station and poured an extra tall mug of steaming coffee. When he returned he sat down with a grunt and a wince.

“That didn’t sound good,” Bud told him. “You okay?”

“Just a bit tired these days and a case of heartburn that won’t go away.”

“And, the coffee?” Tom asked, pointing at the mug.

“Makes zero difference. Now, the reason I came to find you, Tom, but Bud here can stay to hear this, is that I have a new insight on your tattooed attackers. They were, as I thought, part of a drug cartel out to make some freelance money. Not Columbian as it turns out. Venezuelan. The entire country is already fairly anti-American so the government turns a blind eye to things like this.”

“Did the authorities ever get the others in that sedan in Oswego?” Tom inquired, wondering where this was going. Harlan usually set up a longer explanation with a little tidbit up front.

“Between the locals and state officers they captured the injured guy and two of the others. One was at large until yesterday when he tried to run from a simple police stop down in Syracuse.

Something stupid like a broken brake light. Anyway, he ended up fleeing north on Interstate 81. Troopers got spike strips down in front of him up in Watertown just before the bridge. He oversteered and hit the safety barrels at the south end, flipped into the air and landed upside down in the river. Dead before they could get to him.”

“So, that’s the end of it?” Bud asked.

“No. Not quite. It turns out that Interpol has been watching this group and believes they have a tie in with an old friend of yours, Tom. *Atlas Samson!*”

Samson, former owner of the third largest shipping company in the world, had recently been arrested for pirating almost all the original store of helium at the undersea Helium City. He also had tried to have Tom killed on a couple occasions. But, he had been arrested, tried and jailed in Germany for his crimes while his much nicer son, Haz Samson, had been placed in charge of dismantling the shipping empire and making restitutions to several governments and to Swift Enterprises.

“But, he’s in prison. Right?”

Harlan sighed heavily before taking out a vial of antacid pills and popping two into his mouth, washing them down with his coffee. “He is. The thing is a lot of his old cronies are still at large and he’s been in contact with a few of them. Interpol believes that we didn’t get all of his stashed money and that he hired this drug gang to kill you out of revenge.”

“Is Tom going to have to be on the lookout now?” Bud wanted to know.

“Probably not, and that’s good news for all of us. Yesterday, the head of that cartel was found, minus a few necessary body parts, in downtown San Cristobal, along with more than twenty of his senior associates similarly incomplete. Now, while another Jefe will step up and take over his business it is unlikely that any contract work will transfer, if you get my drift.” His face scrunched up in pain.

Tom took the coffee mug from his hand and said, “Bud. Go call Doc. Tell him Harlan is in pain. Fast!” As Bud made the call Tom eased the Security man to the floor. His pulse was weak, but the heart was beating.

Three minutes later the young medico burst into the cafeteria followed by three of his medical techs. Two were pushing a gurney and one was carrying a large satchel.

After motioning the boys to stand back, Doc began his

examination, all the while asking Harlan questions.

A couple minutes later he asked for a syringe of some medication and injected it into the IV bag one of the techs had already attached to the stricken man's right arm.

"Just a little sedative, Harlan," Doc assured him. "You're having a small heart attack right now and I'm going to put an oxygen mask on you. Don't worry. It's relatively mild as far as I can tell in here. You relax, I'll stick a couple sensors on your chest and we'll get a little tape with the real story. Hang on."

Several minutes later Doc stood up and motioned for his techs to get Harlan strapped to the gurney for transport. "Yep. I told you all this stress was going to get to you, didn't I?" he chided the Security man.

Harlan pulled the mask to one side long enough to state, "But, I thought those pills were supposed to take care of it."

"Get the silly man out of here and transport him to Shopton General. Call them and set up for an electrocardiogram and possible stent insertion. I'll be out in a minute. Don't leave without me!"

As they moved the gurney toward the door, Doc turned to Tom. "I'm pretty sure he'll be okay. He's had a little chest pain and some other symptoms for the past six months, but no attacks. I'm glad he was with you two when this hit. I'll keep you posted." He jogged away and was soon out the door.

The two young men stood in partial shock for several minutes. Tom finally took out his cell phone and dialed a number.

"Momsie? I need you to go pick Harlan's daughter up at their house. She should be home from school right now. Her father had a small heart attack just now but should be fine. Doc is with him and they are on their way to Shopton General. Bring her home and get her calmed down. I'll let you know when she can come see her dad."

After reassuring her that Harlan would survive, he hung up.

"Well, I'm not going to get anything done today. Why don't we head over now," suggested Bud.

They did and it was only an hour later that Doc Simpson came out wearing a big smile.

"He's fine. We cleaned out a small piece of clot and inserted a shiny pair of stents to hold one artery open. He was awake the entire time and will go home tomorrow morning. We'll insist on two days of rest and then he can be back at work."

Tom called Anne Swift and gave her the news, then he and Bud visited with Harlan until his daughter arrived. She was fifteen and very mature for her age, but the emotions broke through and she was soon curled up on the bed with him holding and rocking her.

“It’s okay, sweetheart. They just put a couple things that look like the springs out of ballpoint pens in me and I’m fine. Promise!”

The boys left with Anne remaining to take the girl back to the Swift home for the night.

On the way back to Enterprises Bud asked, “I hear that the folks reviewing the video from Wormy’s wild ride say they saw something really strange.”

Tom mentally reviewed the report but could not be certain what Bud meant. So many strange and interesting things had been discovered. “Which one?”

Bud looked a little exasperated. “The mini-galaxy thing!” he said.

“Ah. That. Yes, it was interesting.”

“Interesting?” Bud practically exploded. “You unleash actual anti-matter out in space and there is a miniature spiral galaxy for a split second that practically yanks the *Worm Rider* inside and then collapses like the most incredible movie special effect ever, and you say, ‘Interesting?’”

Tom turned to face Bud. “Okay. Admittedly, I never expected that. Just as admittedly, there is absolutely no way to retroactively study it except for the high-speed camera mounted on the *Challenger*. Even at two thousand frames per second, and as closely framed as it was, we only have a visual recording.”

“At least tell me you think it was *extremely* interesting,” Bud pleaded.

“I think it was amazingly interesting.”

Bud gave a single emphatic nod. “How’s the new ship coming along? I guess she’ll be built up in orbit like the *Sutter* was, huh?”

“Yes. And she’s coming along fine. I’ve got the shape right and the main power figured out. It’s just a matter of assembly.”

“Yeah. About that. I’ve been holding onto a question about the design for a while. From what I’ve seen it looks like a futuristic fighter jet. Stubby wings in the back, air intakes, and all that. What gives?”

“Well, if you’ve got a good picture of it in your mind then let me describe it. Up front in the long nose are the three containment areas. They are total magnetic surroundings that will not let the

anti-matter move a fraction of an inch until we want to eject it. Behind that is our crew compartment. It will only be about fifteen feet long and more than half of that is filled with seats, control panels and storage cupboards, so it'll be crowded. Behind that is all our equipment and the nuclear reactor and cooling systems and fuel and plasma engines."

"Fine, but what about the intakes and the wings?" Bud persisted.

"First, they are the forward-facing engine ports and an area to chill the reactor coolant, not intakes. And the wings are the sensor arrays and extra fuel storage. Before you ask, I had Arv build a miniature and test it in the air tunnel. Not flight worthy."

"Well, there goes that notion of taking off from Enterprises to the thunderous applause of our adoring fans, a quick flight to the wormhole patch, out to... wherever we're going and back with us swooping in for landing and a second round of applause and lots of kisses and roses and—"

"And you're a real dreamer. I have to give you that. But we will be taking the *Challenger* to the Outpost, then riding with the new ship in the nose of the *Sutter* to what you refer to as the wormhole field, and only then do we power up and head in. We'll just repeat everything in reverse to get home a week later. Happy?"

With a rueful grin, Bud replied, "Not as much as I might be if there were crowds of fans and those kisses I mentioned."

"You'll have to make your own arrangement with Sandy on that!"

"Hurumph! Anyway, when do we go?"

Tom had a fair idea but there were still some unknowns such as getting delivery of the anti-matter, completing the build and fueling of the reactor and transporting it into space, and all the final assembly. "Maybe a month if all goes well."

"And when do I tell Sandy we'll be back?"

"The same as I'm telling Bash. I intend to remain on the other end for seven days. Even with travel time and a day on site to locate the right wormhole we'll be back in about twenty days."

CHAPTER 15 /

DEPARTURE

AS TOM and Bud strapped into their couches, the giant *Sutter* began moving away from the Outpost. It had been decided to fly the *Galaxy Traveler* out farther past Mars where the calculations of Tom and Dr. Hawking showed the likelihood of an even larger field of mini wormholes. *Sutter's* plasma drives would get them there in less than four days, and it would save fuel in the smaller craft.

With so many things to attend to, Tom had opted to have Red Jones and Zimby Cox take command of *Sutter* for the outbound and return flights. He and Bud would travel in the large ship but spend time performing many of the final physical and systems checks on the trip to their release point.

Bud had laughed when he first saw the side of the sleek ship. “*Galaxy Traveler*, huh? Didn’t even give me a chance.”

“My darling wife named her and I am a good husband so *Galaxy Traveler* it is. One day, very soon, you will learn this lesson.”

To accommodate the *Galaxy Traveler's* size had been difficult. The forward cargo module area on *Sutter* could only contain the back half of the wedge-shaped craft, and the nose that had been built to accommodate the mining module—opening to a width only one-half that necessary to fit around the back of the new vessel—would not be sufficient.

Certainly, it might be possible to stop *Sutter* at the launch point, extract the rear drive module and back the *Galaxy Traveler* out, but that was going to be clumsy and time consuming.

When Tom brought this up to his pattern maker, Hank smiled sweetly and told him, “Looks like you haven’t paid really close attention to the inside of that nose area, skipper. I figured out that there would come a time when you installed something up there that needed a wider opening than the mining module, so everything up front can be hydraulically shoved out like a flower opening. So, unless you make a sudden change to the *Galaxy Traveler's* width, or at least the part that stays inside *Sutter* for transport, it has about three feet to spare.”

Tom shook his head slowly in wonder. “It shouldn’t surprise me, Hank, but you are a constant source of amazement. And, foresight. I’ve got to talk to dad about giving you a raise.”

Hank smiled. “Hold onto that for about ten months, okay? Your dad just authorized a very tidy increase seven weeks ago. I do like the thought, but I’ll let this one gather some interest... just in case I pull some dumb stunt in the coming months. I’ll want something to offset that!”

The both had laughed.

“We’re fifteen miles from the Outpost, Tom,” Red radioed down to the room where the rest of *Sutter’s* crew was sitting. “Maneuvering repelatrons are stowed and I’m throttling the plasma engines up now.”

“Fine,” Tom called back. “Keep us posted. Hanging out down here is sure different than being in the driver’s seat. Out.”

Acceleration was kept to just one point two Gs so the trip out took an extra half day, but it placed less stress on everyone and allowed Tom, Bud and several technicians to continue to do much of the computer-based systems checks.

Following the final one-hour zero-G glide before they reached the wormhole field, Tom and Bud climbed into the *Galaxy Traveler* and strapped themselves tightly to their couches.”

“This is a really strange sensation,” Bud admitted. “It’s kind of like the first time I had the opportunity to fly one of the military’s stretched F-18s. When they added the heavier engine package the nose end of the body got an extra eight feet and now there is just no way to turn around to see any of the aircraft. You feel like you’re dangling out over nothing.”

Sometimes Tom envied his friend’s flying experiences. While Bud was a full-time Enterprises employee, he was invited to take part in test flights and aircraft review sessions several times a year. As Mr. Swift had put it, all of the extra experience only served to make him an even more proficient pilot, and he brought back some incredible ideas that often found their way into Swift aircraft products.

“Never having had the pleasure, I can only imagine. To tell you the truth, this is a little unsettling,” the inventor admitted looking around. “I’d hate to try a carrier landing in something where I felt this disconnected.”

The sat in silence as they watched Mars slide past, about fifty degrees off their right side. Soon it was behind them.

Red’s call brought them out of their reverie. “Unless you have any objections, skipper, I’ll switch on the plasma drive for another braking maneuver in thirty seconds.”

“Go ahead. I’ll make sure Bud gets his belt tightened and tray table back in the stowed position. We’re ready down here.” They both swung their couches around to face the back wall of the cabin.

“Great. Fifteen... ten... three... two... and...”

Even with the incredible acceleration couches Tom and Doc Simpson had devised—originally for *Sutter*—both young men felt as if seventy to eighty pounds of heavy blankets had just been dropped over their bodies. It wasn’t painful, but it was noticeable. It would continue for about two hours before Red would throttle back from their 1.5-G slow down back to just 1-G.

Fortunately, Tom was certain that this would only happen twice while they were in the *Galaxy Traveler*.

The cockpit of the *Galaxy Traveler* had only a little spare room so getting up to stretch during the 1-G periods was about all the movement they could manage. It really didn’t matter as they had dozens of things to test and check on the ship during the trip. Nothing could be more than a fraction off from perfect working order if they were to pull off this seemingly impossible voyage.

“Remind me again of what’s in the room behind us, skipper,” Bud requested. To Tom he sounded as if he were talking through gritted teeth.

“Well, along with most of the computers and systems for the ship, we have a few repair items and tools. The main thing back there for us up here are the power converter/diverter that takes the big nuclear reactor’s output and sends just the right power to each of the systems. Oh, and our air filtration and regeneration systems are back there as well.”

“Any first aid kit?”

“No. Why?”

Bud turned his face toward Tom. The inventor was alarmed to see a trickle of blood running down his friend’s chin from the right side of his mouth. “I bit my tongue when Red punched the engines this last time,” the flier admitted sheepishly.

“How bad?” Tom was worried that if it were a bad bite, Bud might require medical assistance.

“Just the tip,” Bud told him. “If I keep it pushed up against the roof of my mouth I think I’m getting it to stop bleeding.”

The remainder of the trip went quickly and *Sutter* with its cargo arrived at the point where Tom’s instruments had detected a field of miniature energy dropouts—the field of wormholes.

“Are we sure there are wormholes out there, Tom?” Bud asked.

“Pretty certain. See all of those little dots on the screen?” Tom asked pointing at a black screen with about two hundred tiny white dots scattered over it.

“Yeah. I figured those were stars or something. Not right, huh?”

“No. That one display only shows us where zero energy places I believed are associated with a wormhole are located. If you look closely you can see that some are larger than others.”

Bud peered at the screen and a smile crossed his face. “Yeah. I see that now. Are those bigger holes?”

Tom shook his head. “No. The larger the image the closer it is to us. The computer has about fifteen different sizes from a single pixel—telling me the potential wormhole is more than two hundred thousand miles from us—all the way to a cluster of about forty-seven pixels that say it would be within a mile of us. After that, as we near one the pixels change from white to blue to green to red.”

“And, red means we’re about to bump into it?”

“Yes. Or, pass around it. They are so tiny that I believe we probably pass through many of them each time we’re out here. We’ve just never noticed it because we didn’t have the sensors or even the need to look for them.”

“So, I could have a wormhole inside me right now?” Bud asked a little worried.

“Possibly. But since it is probably an inter-dimensional occurrence, you aren’t actually occupying the same point in space with it.”

Bud looked at Tom, narrowed his eyes for a second while he thought about the situation, and then brightened. “One of those what I don’t know about won’t hurt me things?”

“I believe that pretty much sums it up. Let’s get ready to launch.” Tom toggled his headset mic. “Red? Bud and I are going to get sealed up. Give us ten minutes and then open the front end of *Sutter*. We’ll let you know when to release us.”

“Roger. We await your call.”

They took turns using the area behind their seats to get into their boots, gloves and helmets. It required a little longer than anticipated and Red called down as Tom was snapping the gauntlet gloves onto his suit. “You guys okay down there? It’s been

fifteen minutes.”

“Yeah, Red. Hold your horses. Tom’s just making sure his hair is straight and his nail polish is dry,” Bud quipped.

A minute later Tom slipped into his seat and buckled up. “Okay, Red. I’m all pretty now. Open the front and be ready to release us.”

With the *Sutter’s* hull out of sight behind them, Tom turned on a camera mounted outside that faced the rear of the *Galaxy Traveler*. It showed the giant ship behind them with the eight panels that surrounded them silently moving out and away. It took three minutes, but soon Tom called up for their release.

A small shudder went through the ship as the padded durastress arms popped off from their contact points. Tom gave them a minute to swing away before getting back on the radio.

“We’re powering up all systems, Red. In two minutes please back away and set us free.”

“Will do, skipper. You and Bud keep yourselves safe. Okay? We’ll pull back and hang around until you disappear.”

“Great. As planned, once we’re gone please move into Mars orbit and wait for us to come back. If this goes as nicely as the test probe, we’ll take a look and a few measurements and then head back. It should take seven days like agreed, unless we run out of things to look at.”

Once the ship was fully operational, Red moved the *Sutter* back leaving Tom’s smaller ship fully in empty space. Tom wanted it to be done this way as the *Galaxy Traveler* had minimal fuel for its three small maneuvering jets, and he didn’t wish to use more necessary to ease them out. The other maneuvering jets they had were in the very nose of the craft and would be used to turn around to head back into the wormhole they exited from.

“We’re clear, skipper,” came the call from Zimby. “Red’s got his attention in the rear view mirror, so I thought I’d let you know. Happy hole hunting!”

On the final leg of the trip out Tom had given Bud a crash course in the use of the flight controls for the *Galaxy Traveler*. Since the flier was a natural born, “Give me the stick for a minute to study things and I’ll fly this thing” kind of pilot, it had been easy for him to understand the entire setup.

What he didn’t know much about were the systems Tom now turned to that would search out the different wormholes they might be able to use.

“Give me about a twelve degree turn to the left and bring the nose up twenty-two degrees, Bud,” Tom requested. “Great. That’s just about got one centered. Nudge us forward and stop when we’ve gone about thirty thousand miles.”

Bud practically guffawed at the idea of a simple nudge getting them that distance. He knew that the powerful plasma engine they would use to maneuver around the vicinity had the power to get them that distance in less than five minutes.

“How’s that?” he asked as they slowed to a halt.

“Fine. Okay. Another two point two degrees up and half a degree back to the right. Stop! It’s centered. Transfer controls to my panel, please.”

Bud tapped a virtual switch on the all-glass control panel and a small LED on Tom’s side flashed twice.

It was a balancing act and only with the assistance of the computers could Tom take them forward slowly enough and then stop their progress at the correct point. He quickly wished that he had built the *Galaxy Traveler* slightly larger so that they might have fine control using a series of maneuvering jets or small relatrons that they did not currently have.

“Good work, flyboy. Between us we now should be within a hundred feet of a good hole. I’m sending out the probe.”

A small hatch in the ship’s nose opened and a thin cable snaked out behind a golfball-sized head. Tiny reaction jets positioned around the head let off minute puffs of nitrogen that was fed up the cable. Using a joystick, Tom piloted the probe to a point that should be inches from the wormhole. Then, and too small to be seen from the ship, he extended the monofilament glass fiber probe.

Light from a special laser in the “ball” was fired and the optic fiber scooted forward.

As the tip extended further the image suddenly changed. The blackness of space was replaced in an instant with swirling colors and brilliant flashes that seemed to come from everywhere. This was a little different than their other wormhole encounters but nothing Tom worried about.

He adjusted the input and pushed the probe forward several feet. His previous experience with the *Worm Rider* indicated that those two earlier holes had been traversed in fewer than a couple hundred feet of the optic fiber. He hoped this one would prove to be similar.

It was slow and steady going but nine minutes later Bud cried

out as the picture instantly changed to an image so bright that the monitor shut down to protect itself.

Tom pulled the fiber back and stopped. It had exited at two hundred and twelve feet.

“What was that?” Bud asked, eyes wide.

Tom tilted his head to one side and gave a small shrug. “My guess is that this particular hole comes out very close to a sun. Not a good candidate—like the blue dwarf that ate the *Worm Rider*—so I’ll withdraw and we go see if we can find another one.”

After pulling the probe out from the hole, Tom tried the monitor. It now showed the scene before entering—the darkness of surrounding space and the millions of stars out in front of it. He was glad to see that the bright light had not damaged anything.

It took five hours and eleven more wormholes before Tom found one that seemed to come out in a safe location.

During all of the tries he had been mentally mapping the length of each hole—they ranged from ninety feet up to more than five hundred feet—and trying to determine if that equated to total distance between entry and exit. He firmly believed that there was a direct correlation.

This latest hole had an apparent length of just a few inches more than two hundred and three feet. Once the tip exited he could see that it was outside of a solar system. Numerous calculations later he turned to Bud. “I’m pretty certain that is Alpha Centauri.”

“How?”

“Well, it is a triple star system made up of Centauri A and B and those are orbited by Proxima Centauri. What we’re seeing from the probe is exactly what astronomers have been getting photographs of over the years.”

“Is that close to where we want to go?”

“Sadly, no. It is in the general direction give or take a few degrees, but we want something that goes out a three times farther. Now, if we assume that the first time we ended up close to a star, and that was almost twelve feet farther than this time—”

Tom was soon immersed in performing a series of equations. In about ten minutes he looked up.

“So, if we figure that this is Alpha Centauri, and it took a hole two hundred and three feet to end up within what is probably a quarter light year away—just a bit over four point one light years

from Earth—that means we need to find a hole that extends out perhaps four hundred and ninety feet.”

“Easy,” Bud stated with a confidence Tom wished he shared. “Let’s get cracking.”

By the following day Tom was almost ready to give up. The best they had been able to find was at least twenty percent too short and ended up somewhere they could locate nothing recognizable.

He called for the *Sutter* to come pick them up. “Zimby,” he radioed to the pilot on duty, “come get us. We need to get out and stretch and have some real food and regroup on this.”

An hour later he and Bud depressurized the *Galaxy Traveler* and opened the emergency hatch. With no plans for frequent egress, Tom had opted to save space and not add an airlock. Inside *Sutter*, he and Bud shucked off their suits and headed for the showers.

Finally dressed in fresh body suits and clothes they sat in The Expanse with Red, Zimby and one other crewman.

“Why don’t you ask your Space Friends?” Zimby inquired. “Maybe they can give you a hint.”

Tom was about to go into the aliens’ previous message stating that they were not allowed by their Masters to assist, but stopped himself. “You know, Zim, that might just be the thing to do right now!”

He left the large room and headed up to the radio room. There, he keyed in a new message. It began outlining his recent steps and failures and his theory about length of wormhole equating to distance to exit. He ended the message with:

If we are to discover the origin, nature and possible outcome of the anomaly it is vital that I succeed. I am not able to succeed at present time and hope you can convince your Masters to let you assist.

He read the entire message twice before sending it. “Nothing ventured, nothing gained,” he muttered as he got up. But, no sooner had he reached to door than the incoming message notification sounded. He spun back and dropped once more into the chair.

Tom Swift from Space Friends. We detect a radical change in your understanding of the anomaly and power necessary to penetrate. This indicates to us your readiness to have higher degree of data. If we understand concept, you >helped< us to come to Earth.

We now >help< you.

That was followed by a series of numbers and symbols Tom knew meant such things as direction, azimuth and other “pointing” info.

He let out the breath that had been sucked in on reading the first sentence of the message. It was true even if it was a hypothesis. He did feel that he had gained a fresh and high-level understanding of the wormholes. Now, they seemed to recognize this and were either freed by their Masters to assist, or had just decided to return a favor.

Either way, he practically sailed back down to The Expanse to tell everyone what had just occurred. It was decided that he and Bud should take a full day off to just relax and regroup. During that time, Tom used the *Sutter’s* computers to plot the locale given him by the aliens. It was near enough to get to using the *Galaxy Traveler’s* engines, but Tom opted to let Zimby go out to the ship and to have Red pilot *Sutter* forward to recapture it.

It was refueled and restocked by the time Tom and Bud woke up. They each made a radio call and left audio messages for their ladies. Back on Earth it was about four in the morning.

Seven hours later they inched up to a brand new wormhole and sent out the fiber optic probe. Tom checked his readings. The tip had just exited four hundred ninety two point three feet after entering the hole. The camera system was a new version of the 3.5-D camera, so the picture of Luyten’s star to the far right was clear. However, the picture was distorted by what he knew would be the black hole to the far left.

He pulled the probe back out, radioed their intent to open the hole, and had everything ready an hour later.

The giant generators in the back of the craft started to whine as they built up the charge that would be necessary to eject and energize the anti-matter to force the hole open. Minute by minute

the whine increased until Tom and Bud had to shut their helmets just to be able to communicate. Thirty minutes went by before the indicator flashed green.

Tom reached out and pressed the switch that would commit them to their new adventure, then sat back and tried to relax.

As the power reached its peak, an almost nothingness shot forward from the ship. As it neared the wormhole a shaft of incredibly orange light shot out... there was a flash that disappeared into itself, and a spiral hole in space appeared! It was much larger than, but identical to, the hole *Worm Rider* had gone into.

Both of them yelled in excitement as they could see into the maw of the wormhole. In a flash, the *Galaxy Traveler's* computers decided that the hole was of sufficient size, and the ship surged into the hole that disappeared a microsecond later.

Their initial excitement over, the two now screamed from the intense pain that coursed through their bodies and heads. Every joint felt as if it were being ripped apart. Shoulders, elbows, wrists and fingers seared with intense pain. Even the cartilage in Tom's nose and ears seemed to be tearing into shreds.

Neither Tom nor Bud could see anything through the heavy curtain of pain that came in wave after wave. Finally, and blessedly, both lapsed into unconsciousness.

CHAPTER 16 /

THE BECKONING

TOM WAS first to open his eyes. Every cell in his body screamed in pain. It felt like he was being tumbled in a drum filled with cactus and lemon juice. His vision was obscured by a veil of blackness caused by his tortured brain while his lungs seemed to be filled with fire.

Next to him, Bud let out a groan and sat up with a yelp and a whimper. He let off a string of swear words that Tom had been feeling but rarely gave voice to.

It took a few minutes, but the pain ebbed away and their vision cleared. There was no sound coming from the generators behind them but a quick glance at the readouts told the inventor that they had simply done what they were designed to do—get them into the wormhole and then shut down. The reactor was running smoothly and quietly.

Looking up, they both were speechless. In front of them lay an entirely new sight, never witnessed by mankind. No telescopic view had ever shown the dimensional aspects of a black hole. As he looked over the anomaly, Tom was struck by one humorous thought.

Hollywood had got it wrong!

Assuming this was a real black hole, it was most definitely not flat, funnel-shaped, or with an event horizon coming in from the sides and dragging all matter and light into it. In fact, it was spherical, and that made a lot of sense to him. Black holes were believed to be the last remnants of dead stars that had collapsed so far in on themselves that the only thing remaining was a place that sucked in everything around it. Why *not* round?

What made no sense were the fluorescent rings that girdled the anomaly giving it an almost Saturn-like look, only this was a Saturn as imagined by a black light artist. Neon colors abounded, and the rings pulsed visibly as he and Bud continued to watch.

“Jetz! That’s incredible,” Bud whispered to Tom. A moment later as they finally caught their breath, he asked, “Why is it running backwards?”

Tom did a double take and sucked in a sudden breath. It was loud and sounded like a gasp. “My god! You’re right. It *is* running backwards. I mean, in reverse. It’s spewing matter *out*! That’s not right.”

But, as the two young men watched, a sight that sent shivers down both their spines occurred. A blue ball of reflected light—that Tom quickly aimed their onboard Megascopes at and could see that it was an icy moon from some long-dead planet—came easing out of the infinitely black sphere and slowly traveled upward and then curved outward from the inky black ball. During the next hours it traveled in a several million mile arc eventually entering and disappearing into the colorful rings.

From their current vantage point they could not see “under” the rings, but rather than passing through, the moon seemed to have suddenly stuck to the rings.

But it wasn’t just the moon performing this impossible galactic ballet. Thousands of smaller objects of all shapes, sizes and colors continued to spill up and out from an object that was *supposed* to be pulling them in.

A check of the instruments showed that the ship had come out of the wormhole at a distance from the anomaly of about point two light years. Closer than Tom felt comfortable with, but certainly giving them an incredible vantage point.

Tom finally thought to switch on the forward cameras and digital recorder. After another hour he shut them off and turned to his companion.

“Okay. You and I are observing the same thing. Right? A black hole that is ejecting and not ingesting?”

Bud nodded, his face looking more serious than Tom remembered ever seeing.

“Good. Now, I am going to take off my suit. Once I do, I want you to pinch me. I have a very bad feeling that I’m either dreaming or in the last throes of death.”

“Really?” Bud asked incredulously.

Tom nodded. “Afraid so. And my being here in front of you might be your last mental processes. As silly as it seems, nothing is right out there. It is like a psychedelic dream or the erratic firing of brain synapses being starved of oxygen. Just humor me for a moment.” He had almost finished climbing out of the suit. His body suit—the one working in concert with the ship’s gravatron emitters—was soaked in sweat.

Bud tentatively reached out and used his thumb and forefinger to pull up some of Tom’s flesh near his left elbow. He gave it a tug and a tight squeeze.

“Ouch!” Tom exclaimed, pulling his arm back. “I guess that

proves it. I'm not dreaming and can still feel things. By the way, you pinched pretty hard."

Bud gave Tom a lopsided grin. "Sorry, skipper. I figured that if you only felt a little tug you still might believe you were in sleepy-bye land. So," he asked with a sigh, "what do we do now?"

Tom sat back in his seat and thought. Bud, seeing the faraway look in his friend's eyes, knew it was best to just remain quiet and let the young genius run everything through his mind.

As quietly and slowly as he could, Bud eased up from his own seat and, like Tom, pulled off his outer suit. And, like Tom's, his body suit was wet from perspiration. He reached into one of the storage compartments on the starboard wall and withdrew a small packet. Tearing it open he pulled out a light blue microfiber cloth that he used to pat away as much moisture as it could. The effect was immediate and startling. By the time he finished with his arms and face and upper body, the wiping cloth felt like it weighed triple its original weight, and his body suit was notably drier.

He pulled another pack out for Tom and removed the cloth, folding his own and resealing it in the package it came in.

Presently, Tom held out his hand without looking around. Bud placed one corner of the clean cloth in it, and the inventor began dabbing and rubbing at his own suit. When he finished he turned around and smiled at Bud.

"Well, first, thanks. I almost forgot we had those. I've got to figure a way to make these body suits so they don't make us sweat so much. Second, I have been thinking about *that*." He pointed out the front view port at the distant anomaly.

"Okay. First, you are welcome and you are also right. These suits work wonders giving us the feeling of gravity, but mine itches something fierce after I've had it on for a couple hours, and the whole not-so-dry-or-fresh feeling could be tackled. And, second, I've got nothing much to do right now, so tell me your thoughts about our little impossible friend." He grinned.

"Do you want to hear the sane stuff, or the 'Tom is going a little crazy' stuff?"

The dark-haired flier's face split into a smile. "I'm all for crazy. You know that. Heck. That's why I lo— uh, like Sandy so much." Now, he blushed as Tom stared at him. "So, what's on the agenda?"

"Well, for starters I want to get a little closer to that anomaly. We're about—" he checked the instrument panel, "—six hundred million miles away. If we hit the afterburners we can scoot forward a couple hundred million over the next couple days. What

do you say?"

Bud agreed. "Good plan. Let's go!"

"Okay. I propose that we grab a couple hours of shut-eye before we head in. I have the feeling we're both going to need to be alert. First sign that the... what the heck are we going to call it. It sure isn't a black hole."

Bud's features scrunched up as he thought it over. Finally, he smiled and suggested, "How about calling it a black fountain? I mean, that's kinda what its doing."

"Not bad. Sure. At least until we get a better idea of what's going on out there, it is to be known as the black fountain."

As Bud settled into his seat with a look of satisfaction, Tom made a few notes in the computer log and then reduced the apparent gravity to 25%.

They both fell asleep within minutes.

* * * * *

When Mr. Swift called them into his office to give a status report, Sandy and Bashalli sat quietly and listened to the information the older man had. They were both happy that everything seemed to be going well but were equally sad because the delay in locating the correct wormhole meant that Tom and Bud would at least two days later in returning.

As they climbed into Bashalli's car Sandy suggested that they soothe their nerves with a little shopping.

Bashalli agreed and they headed for the shopping center that had been recently opened on the outskirts of Shopton close to her house.

But, neither one was really in the mood so they drove back to Bashalli's house, pulled out a carton of ice cream, and sat at the kitchen table missing their men.

* * * * *

Bud was already awake when Tom opened his eyes. "Morning, skipper. Everything's the same as before we went sleepy bye. Another small moon or large asteroid came spewing out about twenty minutes ago. It's joined the other items that dropped into the rings and disappeared. Do you think those bits are getting sucked in at the underside and spit back out at the top?"

Tom paused and thought before giving an answer. "Normally I'd tell you that is a silly idea, Bud, but until we get a chance to take a look, I'll have to put it in the theories to disprove box. Have

you been up long?”

Bud looked at the chronometer on the control panel. “About an hour. All the aches and pains seemed to have disappeared while I was zonked out. Good thing because I checked in our little first aid kit—we do have one, by the way—and there are no aspirins.”

Tom nodded. “Can’t have anything that thins the blood. I thought Doc put in some pain patches. Did you see anything that might have looked a little like a Band-Aid but was foil wrapped?”

“Is that what those are? Well, I don’t need it now. How are you doing?”

Tom stretched his arms and legs. “Actually, I’m not in any pain.” He told Bud about his earlier “cactus and lemon juice” pain analogy.

“Funny. I was thinking it felt like I was on fire and somebody was trying to beat it out using a hundred wet bicycle chains.”

Bud, got out of his seat and pushed the back upright to give them some maneuvering room. Tom followed suit.

“For the time being, since everything seems to be okay, I say we remain out of the outer suits and just sit around in the body suits. Also, I’m up for breakfast,” Tom stated. “But first, I want to get into a clean body suit. Okay?”

“Me too. Last one dressed has to fix the food pouches!”

It was a tie but Bud graciously offered to do the food duties. With just enough room to stand upright at the back of the cabin, they ate their meal and discussed next moves. Bud was all for going exploring but after his initial enthusiasm, Tom decided that he preferred to take a cautious approach.

“For one, we need to mark our wormhole so that we can find it again. As it is I checked the readings and it has drifted about a thousand feet up and to our right. I want to get us back in position and try to anchor a radio beacon to it.”

“How can we do that?”

“Well,” Tom explained, “we are carrying three beacons up in the nose. Each one has a metal-coated monofilament line that we can insert. The line is about a thousand feet long. I’m hoping that it will stick out the other end and stay there.”

To assist in that effort, he described how the first fifty feet of the filament could be made straight by applying a small electrical charge to it. Once out the other side of the wormhole, the charge would be removed and the end would coil up into a five-foot-wide

ball. Tom hoped this would prevent it from being pulled back into the hole.

“If I’m right, it’s like dropping a water buoy with an anchor on the end.”

“Let’s hope there are no strong space currents, them.”

After eating and attending to their bathroom necessities, they climbed back into their outer suits and returned to the front of the cockpit. Tom performed another sweep of their surroundings and found their exit hole. He brought the *Galaxy Traveler* up to face it and sent in their camera probe. “I just want to make doubly certain that we’ve got the right one.

It was, so Tom extended the beacon’s line into it. As it neared full length, Tom switched off the power and released the grapefruit-size radio ball.

They tested the beacon by moving several miles away. The signal came in loud and strong making Tom feel better.

The primary function of the ship’s engines were to generate the forward momentum to shove them inside the wormhole at an incredible rate of speed. Space constraints had made it impractical to add repelatrions or other engines to allow for lengthy exploration forays, but that did not mean they could not explore.

They had enough anti-matter to perform a total of three wormhole jumps. They had used one getting here and needed to reserve one for traveling back home. The final one was for emergencies.

They did have enough fuel for the engines to travel around within a couple hundred million miles and over a several day period. After discussing it, Tom decided to go with Bud’s suggestion that they try to see what was happening on the underside of the rings and the lower portion of the black hole.

“I really don’t want to get too much closer so I’m going to spiral away and then downward,” Tom explained. A few hours later they passed the plane of the rings—or, whatever they really were—heading below them.

Tom’s heart almost stopped when they took a close look through the Megascop. There was *nothing* below the rings. No ejecta, no materials of any kind, and *no black hole!*

“I don’t like the looks of that,” he told Bud. “The rings themselves must be gathering everything that drops down onto them. We’ve got to go back up and study those more closely. I have an idea that they are the dangerous part of whatever that is

out there.”

He reversed their spiral and headed back to their starting point. By the time they arrived it was dinner time. After “parking” the ship within a few thousand yards of the radio beacon they got back out of their bulky suits and had more of the food packets Chow and his team had put together for them.

It wasn’t haute cuisine, as Bud pointed out, but it was hot.

Following another sleep period they discussed the plan of action. Both were anxious to learn as much as possible but understood the limitations of their ship. As Tom put it, “If we had a two part ship, one big part to get us here and back and another small exploration ship, we’d have the best of both worlds.”

“Like towing a little compact behind a big motor home, huh?”

“Pretty much. The large ship might even offer refueling services to extend the small ship’s capabilities.”

They were talking things over when Bud got up to grab another drink pouch. “Want one?” he asked.

“No. I’m fine.”

Bud moved back in between the seats and leaned forward preparing to ease back into his seat when he froze.

Tom looked up to see Bud’s face draining of all its color. “What is it, Bud? Are you okay?”

Bud couldn’t say anything. He was transfixed and his body didn’t seem as if it were inclined to move.

“Bud! You’re scaring me. Stop this and tell me what the heck is wrong?” Tom’s voice, while measured, was tinged with both concern and even a little anger. Bud could be a pain with practical jokes sometimes. He really didn’t want this to be one.

Finally his friend lifted a hand, the one with the drink pouch that now dropped to the deck, and pointed over Tom’s shoulder.

“Th-tha-that!” he said visibly shaking. “It’s that! Look!”

Tom spun around to see what his friend was seeing and also froze.

Seemingly floating above the black hole, and at an indeterminate distance, were two ghostly, boney and disembodied... hands!

* * * * *

“This sucks, Bashi,” Sandy declared as they sat having dinner at

Tom's house that evening. "I mean, I know they've only been gone a few days, and hecko, they just went into whatever wormy thing they found up there this morning, but I'm missing my great big lug. I can only imagine how a newlywed like you must feel."

Bashalli nodded. "Yes. Deep inside of my heart I understand that they will only be gone a few days from this point, but I have an empty feeling right in the middle of my stomach."

Sandy looked at her, then down at the table and then back up. "It hasn't hurt your appetite. You zipped through that baked ziti like it was your first meal in a week."

They shared a laugh. It was true. Both of them felt a distinct sense of loss and an uncomfortable emptiness, but they had each eaten everything on their plates.

"Sandy. May I ask you a very personal question about you and Bud?"

Sandy could feel a good blush rising and fought to keep it from appearing on her face. She strongly believed this line of questioning might be something along the same lines that her mother had taken a few months before. It had been uncomfortable then, too.

"Uhh, I guess so," she replied.

Bashalli took a very long and slow breath before asking, "Have you and Bud ever been, ummm, intimate?"

Bang! There it was. *THE* question.

Now the blush rose like a charging train and her mouth dried up like a desert. She just knew that her lips would be gaping open and flapping like a fish out of water and it annoyed her. She tried to scowl.

"Oh. I am sorry. I should not ask questions like that. It is just that now that we are sisters, and now that I understand what it is to share yourself, I actually wanted to know something else. Forgive me. It was the wrong starting question."

Sandy found her voice. "Golly, Bashi. When you ask 'em, you *really* ask 'em! But, you're right. We are sisters and sisters don't keep secrets. So, the answer is yes, but only sort of."

Now, Tom's wife looked confused.

"Okay. Let me tell you the story. No, wait. I'll tell you the end of the story. Bud and I have been alone many times but for the most part we've just kissed and cuddled. But, about ten weeks ago, when he told me about this mission they're on now, I sort of

grabbed the bull by the horns and tried to take advantage of him.”

Bashalli gasped and giggled. “You can not mean that. Surely it was he who—”

“No. It’s been like this our entire relationship. When we first started dating, way back when I turned sixteen, I had to be the one to take his ears in my hands and pull him in for our first kiss.” She looked wistful and then smiled at the memory. “He’s really shy about that sort of thing, Bashi. It’s one of the many reasons I love him. The thing is, that night mother called his apartment about the time I was slipping out of my blouse. I can tell you, it really ruined the mood. So, my answer to you is we darned near were, but haven’t yet. Why?”

“Well, ever since Thomas and I spent our first married night together I have felt like we are connected more strongly than ever before. Emotionally. Mentally. What some people might call our souls. I do not really know. I have been trying to determine if it is our more complete relationship that is behind this or something else.”

Sandy smiled and took Bashalli’s hands in hers across the table. “Bashi, I honestly think it’s not that. Not the physical relationship stuff. It’s the same with Bud and me, and has been ever since I woke up one morning when mother and daddy dragged me off on a vacation to Wisconsin, of all places, for a week. About the third night I lay there feeling sorry for myself and then it was like a little electric jolt went through me. I suddenly realized that I was head over heels and totally in love with Bud. From that time on I’ve felt like I can sense his mind. I finish his sentences, sometimes. It’s spooky.”

Bashalli was nodding and smiling. “That is how I feel! Oh, it is a wonderful feeling is it not?”

“It sure is, Bashi. And, it will keep us in touch with them until they get home. As long as we can feel them, they’ll be okay.”

CHAPTER 17 /

SKIRTING DISASTER

AS THEY BOTH looked, the ghostly hands seemed to contract into loose fists. The “fingers” that had been pointing downward—relative to their orientation to the black hole—curled slowly under and up until the tips were hidden behind the back of the “palms.” The motion took more than three minutes. On close inspection they did not look quite like fists, but the effect was close.

After a pause of eleven minutes, the fingers slowly returned to their original positions.

It was completely unexpected and unnerving to both of them.

“That can’t be what we’re seeing. Can it?” Bud’s shaking voice asked.

“It is impossible according to any science or theory I know of,” Tom replied. “I see it and you see it, right? But, look at the instruments.” He pointed at the front panel.

“Nothing. There’s nothing on the sensors. What the heck is going on?”

Tom shook his head, never taking his eyes off the phenomena. “Without any point of reference, Bud, we can’t even tell how large those are. And, without knowing that we can’t tell how far away they are. If they are there at all,” he added ominously.

“If?” Bud practically sputtered, pointing outside. “If? I’d call that pretty conclusive.”

Tom nodded, but told his friend, “There have been many illusions that people would have been willing to bet their very lives were real. The Magic Lantern comes to mind. By using a primitive projector, mirrors, a little smoke and a special set of hidden side passages, the illusionist was able to make it seem like there were free-floating ghosts in front of the audience. Later on, it was refined to make a woman appear to dissolve into a skeleton and then into nothing. Those—” he also pointed outside the ship, “may well be what they seem to be, or they might be illusions.”

Bud nodded. “Yeah. Now that you mention it I’ve actually seen a program that recreated that Magic Lantern trick. So, how do we find out how far away or how large those are?”

“I don’t know. If we could get any reference point we might stand a chance. As it is, my only guess is that we take visual measurements relative to something we can see, move toward it and out to a

different angle and repeat the measurements. It isn't going to be pretty or accurate, but it is about all I can think to do given our limited mobility."

It took several hours to come up with the first part of the plan. By extending the second radio probe and angling it up just enough to get it outside the cockpit, Tom managed to get several pictures using the high-definition camera mounted to the control panel.

"Okay. Now we use the computer to separate the known width of that ball into at least a million segments."

Bud frowned. "But, we can't tell that kind of detail."

"No, the computer can, and that's the important bit."

Two minutes later the computer had performed the task so Tom tilted the camera up until the ghostly hands were centered in the viewfinder. "Here goes. If the camera can't register those, we're stumped," he cautioned. It wasn't necessary. The camera got the image, and it was quickly processed by the computer.

As the computer performed the division function, the inventor had time to ponder the problem with having something out there they could both see, that a camera could photograph, but was invisible to their scanners working with inputs that ranged from electromagnetic to laser reflective to energy detection.

"Now they are both divided into a million horizontal parts," Tom finally said. "Time to move."

They needed to make their available fuel last, so Tom opted to fire the engines for a brief period and to slowly—*relatively* slow as they were soon traveling at over five thousand miles per hour—traverse forward and on a tangent to their left. It was slow and three days later Tom finally called a halt.

"I'm getting antsy and you are looking completely bored, Bud, so here's where we stop for the second measurement. Oh, and coincidentally, we've just traveled the same distance as light does in one second!"

During their travels the two hands had continued to slowly flex. At least this is what the two men saw when they were awake. When they slept it was anybody's guess. Neither had thought to set a timer for the camera.

Tom lined the camera up and took the picture. Once computerized and processed Tom examined the two shots side by side.

"Well," he chuckled nervously, "one thing is obvious. The black hole may not be visibly rotating but the rings are. See how this small

reddish piece appears way out to the left of the rings in shot one, maybe ten percent in from the edge?”

“Yes, and I can see that it, or something just like it in now almost half the distance closer to the black central ball and easily a third way around the rings. And,” he started to get a little excited, “I can see lots of stuff that was closer before that isn’t there any more. Jetz!”

The computer flashed a notification that the results of the relative measurements had been calculated.

“As I presumed, it’s very rough, Bud,” Tom said as he studied the final results, “but at a minimum those hands must be about two million miles from wrist to fingertip and six hundred thousand miles wide.”

Bud couldn’t think of a single thing to say, until, “And, they aren’t even out there. They aren’t real.”

Tom shook his head but had nothing to refute Bud’s statement. “I have been checking a lot of readings including gravitational waves over the last two days. Whatever that is out there, it isn’t trying to pull either those hands or us in. I think we need to move closer for a better look.”

Bud wasn’t so sure that was a good idea, but he trusted his friend so he nodded slightly.

They discussed how much closer they should pilot the ship. Bud, usually up for anything, now urged caution while Tom was ready to move forward half the distance. In the end Tom agreed to err on the side of safety. “We’re one hundred and eighty-five million miles according to the instruments. Let’s move in to an even one hundred fifty million.”

Bud held up one hand, fingers crossed. “Hit it, professor.”

Tom nudged the controls and the ship gave a small shudder. He immediately stabbed a finger on the red, **OVERRIDE** button. The ship ceased shuddering.

“That’s not right!” he stated as he looked over all the readouts.

“Shaking isn’t good?” Bud asked although he knew very well that it wasn’t a good sign. He was about to add something when the ship shook again. “Whoa! That felt like something hit us!”

Tom pointed out the front window. “Look at that.”

As they watched, hundreds of small objects came into view slowly heading out their way. Tom ran his hands over the controls and quickly had them backing away and moving to one side. The

swarm of golf ball-size objects passed them by several miles.

“What the devil was that?” Bud asked.

“My guess is that our friendly neighborhood space anomaly is kicking some stuff out with enough force that it is flying in many directions, including ours.” Tom paused while he thought. “Looks like we’re going to need to be on our toes as we head in closer. We’ll probably encounter more of that.”

He again nudged the ship forward, but this time Bud was keeping a steady eye on the forward sensor array. “I’ll let you know if I spot anything and try to give to an idea of what direction to steer to avoid... whatever it is that’s coming toward us.”

“I was about to suggest that, Bud. Thanks.”

It wasn’t until three hours later that Bud gave Tom a warning. “Got incomings about twenty degrees right and thirty up from the nose, skipper,” he said in a hoarse voice. “Most of it appears to be ready to miss, but let’s head down a bit.”

Tom complied. This time there was no impact and several minutes later he resumed their previous course.

A few minutes later Bud practically shouted, “Look at that!” He was pointing up toward the ghostly hands hovering above the black hole. They were now rising up, palms toward them. If they had been human Tom would have interpreted this as a motion to “halt.” There seemed to be no hurry in the gesture, and neither he nor Bud really had any concrete evidence that the hands’ motions had anything to do with them.

Tom shut off the engines and allowed them to continue gliding forward without additional acceleration. As it was they were traveling at over fifty thousand miles per hour at this point. He had been prepared for shutdown the past few minutes anyway.

The view in front of them had subtly changed. Their path was taking them slightly down more toward the “rings” than the black bubble of the supposed black hole. At this reduced angle the rings no longer appeared to be primarily blue with streaks of red. They were taking on a grayish tone Tom believed must have to do with angle of reflection from the closest light source, Luyten’s Star. But, he suddenly stopped and stared as his mind hit on a notion that had not occurred to him before.

“Bud. You might want to knock me in the side of the head every once in awhile to wake me up. I’ve been looking at the anomaly through shaded glasses.”

Bud turned to stare at his friend. Tom’s comment caused him to

worry that the inventor might be suffering from some sort of stress problem. He carefully replied, “Now, skipper. You know it’s bad luck to hit the commanding officer. Tell me what you mean by shaded glasses. Okay?”

Tom faced the flier and grinned. “Don’t give me the ‘come here and let me drop the butterfly net over you’ tone of voice. I’m not crazy. Yet. What I mean is that I haven’t been seeing what is right in front of us. Look.” He pointed at the rings. “See how bright they are?”

Bud nodded, keeping more of an eye on Tom than the scene outside. “Uh-huh.”

“Why are they bright?”

That stumped Bud. His mouth opened and closed a few times but he said nothing.

“Let me give you a hint. Other than stars there really isn’t anything that makes light. Things floating in space *reflect* light. But a black hole is supposed to be so dense that it sucks in even light. No reflection. And, the nearest star is farther away than Pluto used to be from our own Sun by a factor of twelve. Therefore, there shouldn’t be this much light shining off the rings. They should not be this bright.”

Now Bud understood. “So, since they *are* pretty bright, where’s the light coming from?”

Tom nodded. “And, I need to check something else. I have a feeling that our hands out there aren’t reflecting light from either Luyten’s Star light or the rings! I think they’re glowing on their own.”

Five minutes later he sat back. “Just as I thought. The wavelengths of light we’re seeing from the hands doesn’t match either of the nearby sources. That tells me that they must be generating their own light. But—”

“Uhhh, but what?”

“Well, if they are giving off their own light, why can’t we directly measure that energy with our instruments? And yet, I can get a wavelength reading from our recording of them.” He looked at his friend. They stared at each other for more than a minute before Bud blinked and shook his head.

“Do real ghosts glow or is that just Hollywood?”

“*Real* ghosts? *Real*? Come on, flyboy. There has to be some other explanation for... for... whatever those are. I’m going to slow us down. Something doesn’t feel right to me.”

“I was wondering when you’d pick up that vibe from me,” Bud stated. “I’ve had the colly wobbles in my gut for the past day. I say we do more than stop. My vote is to turn around and skedaddle back to our wormhole in case we need to get out of here!”

It would save fuel, but take more time, to not simply stop and reverse, but rather to make a sweeping turn. Tom wanted to conserve precious fuel so he set a course to take them back up and around in as tight a right turn as possible. He warned Bud, “We’re going to need to strap into the seats to ride this out for about fifteen hours.”

It took sixteen, and that worried Tom. He had made all his rate of turn to speed calculations based on the outward force he measured from the anomaly several days before. Something began nagging him about the difference. Something that he didn’t want to consider.

* * * * *

“Hi, Daddy. It’s Sandy.”

Mr. Swift chuckled over the phone. “With a greeting of ‘hi, daddy’ I could barely think it would be anyone else. What can I do for you, sweetheart?”

“Bashi and I are feeling pretty miserable about Bud and Tom. We know they’ve only been gone a couple of days, but it feels like forever. Is there any way to communicate with them? Bashi is kind of desperate to hear Tomonomo’s voice and I’ll even admit to missing my Budworth. So?”

“I’m afraid that we don’t have a way to do that. The *Sutter* isn’t outfitted with anything I can think of to use for communications. The boys know that the time limit is seven days. No matter what is happening, at that time they stop whatever they are doing and come back through the wormhole.”

Sandy sighed. He recognized it as her ‘I really want you to do something about this’ sigh.

He softly told her, “I think that you and Bashalli ought to come back to the house for the next night or so. Having people around you, even if it is your mother and me, might take your mind off of worrying about them. Besides, I’m sure they are all right. If there was trouble, they would have come back.”

* * * * *

“Are we late?” Bud inquired.

Tom nodded. “Yes. We are. About a day late. I promised dad we’d spend no more than seven days on this side of the wormhole and I

completely forgot that we lost half a day to recovering from the trip. We should have headed home about twenty hours ago by my reckoning. I guess we head for the beacon and take back the data and observations we have. Maybe we can come back in a few months.”

“Only as long as you get Doc to knock us out for the trip. I’m not looking forward to the actual jump home, but I could sure use a hug and a kiss or two from a certain blonde back on Earth!”

Tom tuned in on the beacon’s frequency. It was extremely weak and took several minutes to get a steady bearing. As the *Galaxy Traveler* sped back to their path home, it appeared to waver several times and shift position by as much as several thousand miles.

He was so intent on the readouts that he failed to detect the large chunk of ejected debris they were speeding toward until it was almost too late. He stabbed down on the controls and the ship lurched to one side, but physics were against them, and the ship’s nose might have turned away but the actual body continued on a collision course, barely moving to one side.

They struck a solid blow with the left side of the hull. The impact spun them around and around until they were both so dizzy they passed out.

When Tom finally opened one eye he immediately saw that their spinning had ceased. The computers would have taken over and begun the necessary engine and attitude jet firings to stop them.

Next to him Bud stirred, moaned and tried to curl up on his side. The self-tightening straps of the seat kept him firmly pulled into the acceleration couch. He gave up, opened his eyes and coughed. “Guess we’re still alive then,” he ventured.

“It would seem so. Loosen your straps and help me check the ship for damage.”

The two of them used every instrument they could including a trio of outside cameras, to scan the ship. There was notable damage to the outer skin of the rear left part of the hull, but nothing indicated that any of their systems—more importantly their reactor and the magnetic containment ‘flasks’ for the anti-matter—had been damaged or even taken off line.

They both let out sighs of relief.

Tom checked the chronometer. “Oh,” he said with some disappointment. “Looks like we were out for almost ten hours. Now, we’re really late. Let’s get going. I think we’re about nine hours away from the beacon.

But as he took another series of measurements he was perplexed. Everything showed that they were now about twenty percent farther away from the beacon's signal than they should be. The collision and spin could not have sent them backwards—it might have slowed them and sent them off at an angle, but not backwards from their previous direction of travel.

He shared his concern with Bud.

“Honestly, skipper, I don't care right now. As long as we can get back to the beacon and get out of here, let's just do it.”

Tom silently agreed, but he was more worried than ever that his private theory about the cause of extended time periods might be coming true.

The *Galaxy Traveler* picked up a little speed and turned to the correct course.

An hour later Tom's heart skipped a beat when he looked at the power output from the reactor. It was down by about one and a half percent. That wasn't right. It was designed to maintain a steady level except when running at high speed to eject anti-matter and open the wormhole.

Worse yet, their fuel now was below fifty percent. That, too, wasn't what he expected. His calculations showed they should still have almost sixty percent. There had been no indication of a leak before or after their recent collision.

He put it out of his mind for the time being and concentrated on getting their final range and bearing to the beacon. As before, it seemed to be on the move only less so the closer they got to it. Soon—but not soon enough to suit Bud—Tom announced that they were going to slow down.

“We'll be at the beacon in one hour. After that I want to spin around and take one more set of videos and photographs before we go home.”

Bud had a premonition that this might not be a good idea but kept his mouth shut.

Right on time they stopped in front of the beacon. It was drifting, and at about two feet a minute, but they quickly matched its movements. Tom tapped a series of commands into the computers and the ship slowly spun around.

As the cameras shot a final two-minute video, Tom took another series of photos of the ghostly hands. They were now back to their fingers-down position but moving more quickly than before and almost making a shooing motion. Every time the eerie skeletal

fingers had made any movements during their time on this end of the wormhole, Tom had the feeling they were attempting to communicate with Bud and him. These were not random movement. They were almost human-like.

The hands might even be representative of human hands except for missing one finger each. Could that mean whatever was behind their appearance was projecting what they thought would be recognizable by Tom and Bud? He quickly put that thought aside as it would lead to questions such as, “how did they know about humans,” and other uncomfortable things.

He shook his head to clear his thoughts, starring at the hands.

“Yeah. I’m seeing it, too,” Bud stated from beside him.

Tom was about to ask what it was that Bud just said, when it registered on his mind. A cold chill ran down his spine.

The fountain of materials that had been ejecting from the anomaly steadily since their arrival had not just stopped, they were reversing and being drawn up and into the black hole. To top everything off, the former rings had risen up to form an event horizon. Everything in them was being pulled into the hole at an increasing pace.

It was time to for them to get out of there!

CHAPTER 18 /

MASS-IVE PROBLEMS

“SKIPPER,” BUD began, sounding a little nervous. “As much as I’ve enjoyed all this, I would prefer to go home right now. If, that is, it’s all the same to you.” He looked hopefully at his friend.

Tom sat almost mesmerized by the sight out their viewscreen. It took him several moments to answer. “It might be a good idea, Bud, but we are still safe sitting this far away. If it looks like we’re being drawn in then I’ll get the wormhole open so fast it’ll make both our heads spin. This,” he pointed at the black hole, “is more than a once-in-a-lifetime event. The video and the readings we can bring back, even if we just stay one extra day, will benefit science for generations.

Or, spell our doom, Bud thought, uncharacteristically gloomy. His mind flashed to images of Sandy. Their entire relationship began racing past starting with their first kiss—at Sandy’s insistence that she be treated as a girl and not as Tom’s sister—and heading to current times. A second, alarming, thought of, *Isn’t this the sort of thing that’s supposed to happen just before you die?* hit him and he shuddered. Sandy’s images disappeared.

“Okay,” he told Tom. “But you have to explain why we get home late!”

In spite of what was going on outside, Tom smiled. “A deal!”

Nothing was spoken for almost fifteen minutes. Tom finally tore his gaze away from the black hole and glanced over at his best friend.

Bud looked thoughtful. “I was wondering if there is some way for us to send a call out through that radio beacon. You know, as in sending something back up the tail?”

“Uhhhh, maybe,” Tom said cautiously. “The problem is that there is no way to disconnect the tail from the beacon other than to cut it. That would mean depressurizing and going out to retrieve it, but that also means having to get very close to the wormhole, bringing the line in and sealing up, somehow, and then trying to devise a way of hooking it up to our equipment in here.” He began rubbing his jaw.

“Oh. Forget that, then,” Bud said dejectedly.

“No-o-o-o-o. We might be able to do something now that I think of it. Give me an hour to look through Hank’s design

documentation. Okay?”

“Sure.”

Only forty-seven minutes went by before Tom looked up with a smile on his face. “I may have figured out a way.” He explained that it would be a better use of their power and air to open the access hatch under the control panel and extract one of the two remaining beacons to work with. He believed he could rig up the beacon’s radio pulse emitter to broadcast back to the tail, and since that was metallic, it would act as an antenna.

“The trick is going to be keeping the power going through the tail to keep it straight until it exits at the other end without that getting tangled up with the first beacon’s tail.”

“Can’t we just straighten that out and yank it back?”

“Only if one of us goes out and does that by hand. I’d prefer to save our air supply. Plus, I don’t want one of us outside in case we have to do an emergency scram.”

Tom, being slightly skinnier than Bud had to strip down to his body suit to fit under the control panel and inside the forward compartment while Bud shoved him from the feet until Tom managed to get one of the two beacons out of its brackets. Having zero gravity in the nose made it a little easier.

With nothing else to do, Bud occupied himself for the following several hours by coming up with scenarios for how to ask Sandy to marry him. A few times a shudder of sorrow and guilt ran through him as he allowed thoughts of never getting back from this mission to enter his mind.

Tom hadn’t planned on performing such detailed work on the ship and did not have the necessary tiny-tipped soldering iron. Instead he had to fashion one from a thin piece of wire that he attached to his pocket iron. It was crude and had to be replaced five times when the solder stuck more to it than to what he was working on. By late that day he had it working, but only just.

“There are a lot of things I wish I could do, Bud, but I’m already worrying about our air scrubbing system with all the smoke I’ve introduced. It’s time to see if this works.”

“What’s it going to broadcast?”

“A simple dot-dot-dot dot-dash dot-dot-dash-dot dot... SAFE.” *Not that anybody can do anything out there, he thought, but at least they’ll know that we’re alive.*

They placed the beacon bundle back in the forward launching bay and sealed the hatch. A quick look at the control panel showed

that the beacon was in running order and ready.

The ship moved slowly as Tom gave a few tiny bursts of the engines. They soon were next to the hole. Tom knew that he would need to cut away the current beacon, but that ought to happen when he fired the laser to open the wormhole. "I wish there was something I could do to recover the beacon," he told Bud.

"What? After all that work?"

Tom explained that he meant the old beacon.

"I thought we might find a way to bring it back in once we cut it off."

The thought worried Tom. If the first beacon was lost and the second, heavily modified one were to fail, that would leave them with a single beacon. That meant they could not explore by taking another wormhole anywhere, but that was more and more a moot point.

"Yes. We can try to do just that. When I turn on the laser to open the hole it will probably cut the old tail anyway. I wish we had a grabber arm to bring the old beacon in. We might be able to maneuver it into the open hatch. Oh, well. Here goes—"

His hands moved around the control panel. All the beacon controls had been moved to be directly in front of him. The front of the ship opened and the tail of beacon number two extended out. "Shield your eyes," he cautioned just before the laser shot out. It connected with the first beacon knocking it to one side and then into the tiny wormhole. In a second the hole opened to a tiny yet visible point and the first beacon was sucked inside.

Tom was shocked at what had just happened but knew he had about one second to get the tail of the second beacon inside, so he concentrated on that. It, too, was sucked into the hole at first, but once the laser shut down it stopped. Cautiously, Tom maneuvered the beacon out and let it push the antenna wire farther into the wormhole. To his dismay it stopped when it was only about fifty feet in. Nothing he did could make it move further.

"What's wrong?" Bud asked seeing the look on Tom's tense face.

"We've bumped into something. My guess is that it's the first beacon. Did you see that get sucked in?"

Bud paled slightly. "You mean, that wasn't planned?"

Tom shook his head. "No. Okay. Let's see if we can pull the tail out a little and maybe wiggle it past the obstruction."

An hour later they gave up. Tom had even tried using the

lowest setting for the forward laser to try to loosen things, "...by warming the wormhole a little." It wasn't enough power to burn through the beacon's tail, and it also turned out to not be enough power to do anything to the wormhole either.

"Sorry, Tom," Bud said. "Now my bright idea's got us down to just one beacon."

"Not to worry. It may have been worth the experiment. Now I think I have some better idea of why we entered the wormhole at such a fantastic speed and got all bumped and bruised. Once the hole is opened a little more than it normally wants to be, it appears to set up a local and strong gravitation field. At the same time, it lets the entrance sort of open and accept whatever is just outside."

Bud thought about that before asking, "So, why didn't it pull us in as well?"

"I think it has to do with power versus mass. That's why our early probes didn't get drawn into the first wormhole we looked into. The lasers used didn't have sufficient power to equal the mass of the probe. Our laser on *Galaxy Traveler* is about five times more powerful at even the weakest setting."

"Well, there goes my next bright idea of parking right up against the wormhole and hitting it with the laser to get us home" He looked dejectedly at his friend.

"No. It won't do that. We need to wait until we have sufficient energy stored so that we can release the second cloud of anti-matter and effectively blast the hole open." He looked at the readings from the reactor. *Down another five percent.* "Even if we wanted to leave right now, it would take about forty minutes to build up the right power."

"Do we stay close to the wormhole, or do you plan to release the second beacon so we can maneuver a bit?"

"Well, it isn't going to do us any good to stay attached to the beacon, so I'm going to eject it. It is still broadcasting and with most of the tail sticking out we should be able to pick the signal up within a thousand miles of so." He pressed two buttons and Bud watched as the ball popped out of the open hatch and moved forward. Once it reached the end of the extended antenna/anchor line it stopped and lazily came moving back.

Tom moved the ship several hundred feet away, but kept their drift matching that of the wormhole. He soon found that it was necessary to use some of their fuel and the reverse thrust to keep themselves from being pulled toward the black hole.

An hour later Tom was about to announce that he intended to build up power for their return flight when the *Galaxy Traveler* was hit by something coming at them from behind. The impact threw both young men forward and into the control panel. It also started the ship spinning again, only this time—and it registered with Tom just as he passed out—something thick and red was being sprayed on the control panel. One or both of them was bleeding.

Darkness gave way to partial light moments later as Tom tried opening his eyes. In a flash he realized the situation and figured that it was his blood being flung forward by centrifugal force. It was also running down his forehead and into his eyes.

With a quick motion he wiped his upper face and checked the instruments. Most were out and a lot of red lights were flashing. He reached down to the arm of his seat, flipped it open and pressed down on a circular red button. It was old-fashioned, but it had been designed to perform an emergency stop in any situation where the main computers were offline.

A minute later the ship ceased spinning, and Tom had a moment to relax and have a really good vomit over the side of his seat. Straightening back up he reached over and checked Bud's pulse. Slow and steady. Next, he carefully prodded his friend in the arm.

Bud groaned.

Tom poked again, this time a little harder.

Bud responded by suddenly reaching forward trying to grab hold of something in front of him. His arm swung back and forth and his hand opened and closed several times. Then, his head jerked up and he looked around. "Where's the stick? I've got to get hold of—" He stopped. He looked at Tom. "Jetz! You're bleeding, Tom. And, who puked?" he asked, sniffing the air.

"It's just a cut on my forehead, and it was me. We went for a spin and my stomach tried to bail out. Sorry."

While Bud checked the state of the control panel, Tom got up and pulled out their small first aid kit. In moments he had a gauze pad over the cut and more gauze wrapped around his head. The bleeding seemed to be stopping by the time he wiped up his mess and then sat back down.

"I've got a little good news, and a little bad news," Bud told him. "First, and as you can see, most of the backup systems are running. We seem to be down a lot on power from the reactor, but I seem to recall your dad telling us that is a safety feature."

Tom nodded, although wincing in pain. His head was throbbing and his vision was blurring every few seconds. He knew he must have a concussion but didn't want to worry Bud.

"What about the containment fields for the anti-matter?"

Bud scratched his head. "Well, depending on how you look at it, it's good and bad. On the good side we have one fully functional containment field and all of its anti-matter. The bad news is that according to the readouts, the loss of power set off a failsafe program and that detected a lack of power for both fields, so the ship seems to have ejected one of our two remaining power pills."

Tom wanted to go to sleep. His head hurt and he felt that if he just went to sleep, when he woke up everything would be fine.

Bud looked into Tom's eyes. "Uh, skipper? Your eyes are kind or crossing and uncrossing. How hard did you hit your noggin?"

"Pretty hard," Tom admitted. He told his friend about his possible concussion. "I'm getting sleepy."

"That, Tom Swift, is the very last thing you are going to do. Stay awake and help me with things. I didn't even get to the bad part. Our collision threw us a long way from the wormhole. Worse than that, the beacon must have been smashed. It's not broadcasting anything. And, that sensor you set up to detect wormholes? Not working right now. We're alive but I can't see where to steer us to try to get home."

With Bud's insistent help, Tom remained awake for another eleven hours. After that sheer exhaustion overtook them both and they fell asleep.

When they awoke Bud first made certain that Tom was making sense and that he did not appear to be suffering mental effects from his injury. He then fixed them some packets of food. He had something Chow had sworn was chicken curry, but it tasted like soapy tofu. Tom had a beef and peppers meal that he claimed tasted like curried goat.

Bud also redressed Tom's head wound. On Earth it would have required a couple stitches. The first aid kit had a small packet of sterile binding strips that he placed across the wound and pulled them tight enough to bring the skin together. Tom might end up with a small scar, but Bud was satisfied that it wouldn't be too noticeable.

Over the next five days they continued to make repairs and to search the area for any wormholes. The reactor was down another sixteen percent, but they had ample power for everything they needed to do. With the one long-gone containment field and its

anti-matter no longer drawing electricity, they could operate on as little as thirty-five percent efficiency. They were at fifty-nine percent.

One thing they could not repair was one of their three plasma engines. It had taken the brunt of the collision and was smashed. The only positive about it was that it was not one of the two upper engines that doubled as their braking engines. Every day at what the chronometer said was 1500, Tom turned the back of the craft toward the black hole and gave them a ten second shove away from it.

Even so, they were losing ground to the tune of about one hundred thousand miles a day. At the current rate they would be pulled into the black hole in about five months.

Of course, their food, water and air would have run out long before then, so Tom didn't waste a lot of time worrying about it.

Not until the sixth day when their speed began to increase. The black hole, it seemed, had switched gears and they now were being pulled in at almost twice the previous rate.

With their fuel for the plasma engines down to thirty percent, Tom took a gamble and drove the ship a million miles farther out than they had been. It wasn't much but neither he nor Bud could just sit around.

Every time they shut down the engines they turned the *Galaxy Traveler* around so they could look at, and study, the black hole. More than that, they studied the ghostly hands that were constantly in motion performing their shooing movement over and over. It was obvious that the hands wanted them to leave the area.

"We want to as well," Tom muttered one day.

They had been on this side of the wormhole for over three weeks. With little physical activity they had cut their food intake by half and the same for water. Tom dialed down the oxygen level a percent or two, but it would only give them four or five additional days. The ship had been outfitted for a maximum of four weeks worth of food and water. Their air scrubbers should be capable of lasting another ten days beyond that. That meant they could breathe for about six weeks.

But then what would they do?

Tom had been alternately watching the sights in front of them and checking the sensors and camera facing away from the black hole. They had discussed it and decided to stop wasting fuel by trying to move out like a returning yo-yo and to try short bursts to

move around trying to find a wormhole. Their wormhole would be best, but Tom would take just about anything at this point.

Their thirtieth day came and went without fanfare or celebration. Most of their days had been filled with boredom. But the next day they both sat up and shook off the mental cobwebs. A second pair of the ghostly skeletal hands suddenly appeared. These were either larger or closer; neither of them could tell. Like the first pair they were motioning for the *Galaxy Traveler* to go away.

Unlike the first, smaller, pair they were more than insistent. If Tom had to personify them he would say they were being downright belligerent or even angry in their motions.

As they watched in horror, the two larger ghostly hands clenched in fists and then began to visibly move. In seconds they raced toward the ship, fingers clenching and unclenching, coming ever closer. In less than five minutes they had bridged almost eighty percent of the gap between them and were coming in faster than ever.

Tom took his eyes off the apparitions long enough to see why their proximity detector had begun blaring a warning. With nothing substantial about the hands, he thought it impossible they could be the source of the alarm.

In the upper right corner of the display appeared an object. It would have to be more than a mile wide to appear as large as it did.

Like the hands, it was streaking in at them. A moment later it was evident to Tom that the object would hit the *Galaxy Traveler* no more than a few seconds after the hands arrived.

He didn't want to make Bud's last few seconds ones of panic, so he simply looked up and kept his mouth closed.

Then, the giant hands were on them and the last thing Tom saw was them crushing in on the *Galaxy Traveler*. A final explosive bang and a jolt was the last thing he or Bud registered.

CHAPTER 19 /

FOLLOWING THE FINGER

WHEN THEY awoke the fuel reading was down another twelve percent. It wasn't good, but it could have been worse. At least for the time being they had power, air and water, and food even if they could barely move inside the crushed cockpit.

"Wha-what was that all about, skipper," Bud asked in a hoarse voice. "The last thing I saw were those giant hands racing toward us and... and... clenching around us." He stopped and panted for a few seconds. "Did they crush us?"

Tom could only shake his head. "I'm not sure, Bud. All the instruments are off line and I've got a sneaking suspicion that we don't want to see what's gone on in the power room." He jerked his head toward the rear of the cabin but failed to see the wisps of smoke trailing out of a gap that had been opened in the hatch.

"I don't want to be a Mister Killjoy, Tom, but shouldn't we do something about that smoke?"

Tom turned around, finding that his neck was exceptionally stiff and sore, and looked to where the flier was pointing with his thumb. As he struggled to unbuckle his harness, Bud popped up from his acceleration seat and moved back to the hatch.

"Feels a little warm around the right side, skipper. I'm going to use the auto suppression system as long as you don't have any objections."

Tom shook his head, immediately regretting the movement, and told him to go ahead.

With a slap of his gauntlet, Bud hit the square orange button on the hatch's control panel. It was obvious that the cabin still was under pressure as they both could hear the hissing of the Halon gas as it flooded the compartment behind them, even through their now-closed helmets.

After looking down at the atmosphere test indicator on his right arm, Tom risked opening his visor and gave a small test sniff. He could detect the telltale aroma of scorched insulation and ozone—there had definitely been some sort of electrical arcing and fire back there—but it wasn't overpowering.

"Take off the bucket, Bud," he suggested, "and then help me over here. I've wrenched my neck pretty bad and need to have you check me out."

Bud immediately pulled off his helmet and dropped it to the floor. He was at his friend's side in seconds. "What's happened? Are you hurt?" he asked, concerned for Tom's welfare.

"I don't think I'm actually injured," Tom replied, "but my neck is pretty stiff and feels like something is clamping on it."

Bud started to laugh.

"Unless we've sprung a leak in the nitrous oxide tank that *we aren't carrying*, what's so funny?" Tom demanded.

Rather than answer, Bud unlatched the back and sides of Tom's helmet, gave it a slight turn counter-clockwise and gently lifted it up and away.

Tom's face spoke of the amazement he felt as the stiffness and pain immediately disappeared. He turned and twisted his head to check things but soon was beaming at Bud. "Okay. I give up."

Bud held up the helmet and Tom could see exactly what had been the issue. The connector ring, the item that sealed the helmet to the suit and kept the breathable air in and vacuum out, was bent in as if it had been struck by a bat.

"I guess I would have been a goner if the cockpit had been breached," Tom said.

Bud patted him on the head and turned back to the rear hatch. After placing his now ungloved hand against the surface close to the small gap he declared that the heat had disappeared. "I'm going to open it up and see what's happened," he said.

A moment later it was very obvious to him what had happened. The primary power distributor, the equipment that took the 400-volt power from the reactor generator and stepped it up and down to meet the needs of various computers, circuits and machinery throughout the ship, was a charred wreck. The only thing it did not power were the anti-matter containment fields.

He was about to pull his head out from the small compartment when Tom's head pushed in next to his. "Ah," was all the inventor said. Without the unit, all they had was emergency power for heating and air circulation.

It required most of the following eleven hours for the two men to disconnect the destroyed unit and get it pulled out from its mounting position. Things might have been easier had Tom thought to add a set of gravitron emitters to the ceiling of the compartment.

He admitted as much to Bud. "It never occurred to me that we might need to do work in there that would be greatly assisted by

having apparent gravity.”

Bud grinned. “Yeah. I noticed that. Made trying to brace yourself to hammer out those spots where it self welded to the rack a bit tricky.” He sighed. “What now?”

“Now, we eat and then we rest and then we seal up and move back to the next compartment and bring out the backup system. If it fails we might lose air.” He was about to add that it would only take a couple hours when he saw that Bud was shaking his head. “What?”

Pointing at Tom’s head, he asked, “And, what are you going to do to seal up all nice and safe with that wrenched helmet of yours?”

Tom blanched, but he could not deny that Bud was right. “Uh... I guess I have to find a way to unbend that seal and make it airtight. So, let’s change the schedule. First we eat, then sleep, then fix my helmet, and then we get the power back on line.”

Bud didn’t want to say anything, but he was feeling apprehensive about the possibility of fixing Tom’s helmet. There was only one other option, and neither he nor Tom wanted to mention it.

Although it had been half a day since their last meal, both had lackluster appetites and barely finished half of their meal packs before giving up. Sleep came no easier to them and both finally gave up after five hours of tossing and turning in their seats.

With no power to the main board Tom couldn’t even turn down or off their artificial gravity system to try to make sleeping easier. It was locked in the full ON state. They wiped their faces with cleansing cloths and each had two packs of cold coffee before they attempted to eat anything.

“What I would give for one of Chow’s giant, fluffy, five egg omelets,” Bud said wistfully as he sucked out the last of the puréed corned beef hash from his breakfast pack.

Tom, already tired of all ten of their breakfast choices had opted to have a rehydrated banana and raspberry shake. It was better than many but he had to agree with his companion. He yearned for real food.

It hit him that he also yearned for Bashalli. “She must be going absolutely spare,” he muttered.

Bud heard him but didn’t ask; he realized whom it was Tom meant. All he did say was, “Ditto.”

After stowing the empty food bags Tom reached over and

picked up his helmet. As he examined it he could tell that the damage was restricted to the actual metal ring of the seal and not the artificial rubber gasket itself. He showed it to Bud.

“Jetz! If we can get that ring back into close to original shape it should work!”

Fifteen minutes later, and after using one corner of the multipurpose table as a brace and shaping point, Tom sat back. Sweat was beading all over his face, and he could feel a slight trickle ruining down his back, but it looked pretty good. The both took a short break before trying it out.

With Bud’s assistance—a small pucker in the very back made exact positioning difficult—Tom got the helmet over his head and seated in the suit’s connector ring. Bud gave everything a slight turn and they both heard the sound of the locks snapping into place.

“Put the visor down and I’ll pump you up a bit,” Bud offered. As Tom complied he attached one of the external hoses to a fitting on the inventor’s suit and then dialed in a setting that would add 2 psi to the inside of the suit.

Five minutes later Tom gave him a thumbs up. The readings on the small panel inside the helmet showed that there was no leakage. Bud deflated his friend before Tom opened the visor again.

“Suit up, flyboy, and let’s go haul out the spares!”

* * * * *

“It was nice of you and your parents to ask me to stay here. I am so very lonely, Sandy,” Bashalli admitted as the two young women sat drinking coffee in the Swift’s kitchen.

“I know, Bashi. I miss that idiot I’ve hitched my wagon to, too. I just wish that there was some way to know what’s going on. Daddy told me that so much is unknown about the time factors of traveling through the wormholes. It’s been five days for us but they might have just arrived and it’s only a few hours after they left. Or, if things work the other way around, they might have been there for weeks.” Her voice choked with emotion over what that could mean.

The sat, each staring out the large picture window in the breakfast nook and each lost in her own thoughts. Fifteen minutes later Bashalli rose and dumped her cold coffee in the sink. She poured a refill and brought the glass pot over to refill Sandy’s mug.

As she sat again she cleared her throat. "You are about to tell me that I am insane, and I will not disagree with you, but something happened last night while I was laying in bed, alone."

Understandingly, Sandy told her, "Those sort of things happen all the time, Bashi. It's perfectly normal."

Bashalli stared at her sister-in-law in total lack of understanding. "Uhhh, having visions about things happening many light years away is *normal*?"

"What?" asked Sandy, now confused. Suddenly it hit her that they were speaking about two entirely different things. "I mean, what visions are you having?"

Bashalli took a deep breath and let it out slowly. It was obvious to Sandy that she was very nervous about whatever she was about to say, so she leaned over and placed a hand on the Pakistani girl's shoulder and squeezed.

"It's better to share that to suppress," Sandy said. "Whatever it is, I'm here for you. Heck, we're here for each other, right?"

Bashalli nodded and tried to smile. "I was laying there unable to get to sleep, as it has been every night since Thomas and Bud left, when I had the feeling that something was... Oh, Sandy, something was trying to get my attention. I think it was a monster of some type. It was trying to get me to come to it." She stopped as tears brimmed under her eyes.

Sandy moved her chair over and held onto Tom's new wife. The sat and rocked for many minutes before Bashalli pulled gently away. Sniffling and wiping the tears that had run down her cheeks she told Sandy, "I saw a giant hand, Sandy. It wanted me to come to it. It was beckoning for me to come to it. I must have fallen asleep then because when I took my next breath and opened my eyes, it was morning." Her brow furrowed and she looked nervously at Sandy. "Am I going crazy?"

Sandy, who had been wiping away her own semi-dried tears, now laughed softly. "Oh, Bashi. If you promise not to say anything to anyone, 'cause I don't want to get hauled away to the loony bin, I'll tell you a secret."

Bashalli nodded, earnestly.

"Okay. Here goes. I believe that you are seeing things through Tom's eyes." She quickly held up a finger to forestall any comeback or question, and continued, "And, I'm sure of it because it happens to me with Bud. A lot!"

"But, what does that mean?" Bashalli asked, astonished.

Sandy slowly shook her head. "I'm not sure. All I know is that at times of great stress, and only when we are apart, I believe I get some sort of connection with my guy, and I'll bet it's the same with you and Tomonomo. The reason I think it's what I described is that after these things happen and I get a chance to talk to Bud, he starts to describe something and I can almost finish it for him. It's spooky, but it's one of the big reasons I know that Budworth Barclay and I are supposed to be together, always!"

* * * * *

It required less time than they thought, and one hour later the smaller but functional spare power unit was in place and had just passed its self-test. They closed the hatch and inflated the seal to the back room, followed by flooding the cockpit with breathable atmosphere. Dropping the air pressure to half of normal had been necessary to test the gasket repair Tom made to the hatch. It would be the last time they could do that; there was not enough spare air to do another refill.

Just as they unsealed their helmets the ship was tossed to one side by an unseen force. There had been a few lighter shoves but this one felt as if they had been broadsided by a locomotive.

Tom managed to hold onto his helmet but Bud wasn't quick enough. He had been in the process of setting it behind his seat and it was picked up and smashed, hard, against the food storage locker. With the shockwave past, he reached over and picked it back up.

Resignedly, he said, "Good thing we can't do any more depressurizations, skipper." He held up the badly damaged helmet. "Now it looks like mine isn't going to seal up very well."

Tom gently took it from his friend's hand. He turned it around several times. The back half was puckered in and the neck ring dented but its seal seemed to be in good shape. What was not in good shape was the faceplate visor. It had been in the up and open position when the helmet went flying, and had hit something with enough force to bend the visor and lock it solidly in a lopsided and unusable position. While Tom knew the pucker might be forced out enough to allow his best friend's head to fit inside, there was little doubt that the visor wasn't going to ever be repaired.

Trying to be as cheerful as he could, Tom handed it back and told him, "It could be worse."

This struck Bud as being very funny, and he began laughing. It was infectious and Tom soon joined him. Both knew they were consuming precious oxygen but they hadn't felt this good for a couple weeks. At least not since the disappearance of the radio beacon and their wormhole to home.

Outside they saw that things had changed significantly. The black hole was drawing in matter at an alarming rate. The former rings had formed the stereotypical event horizon, now swirling in an anti-clockwise direction. On top of that, the original ghostly pair of hands had been joined by two additional pair. All six could be seen in various states of waiving them to come forward.

“Is there any chance that the ghosts are on our side, skipper?”

Tom almost choked on his words. “I don’t know. I think they saved us when that chunk of asteroid was about to nail us... it really looked like they reached out and yanked us out of the way, but I just don’t know.”

He looked over at Bud who sat there with a dull and grim look on his face.

“Bud?” The flier turned his head slowly to look at Tom. “Bud, you are and have been the most wonderful friend a guy could ever have. We’re going to get out of here, but I wanted you to hear that. My suggestion is that we do one more a search for any wormhole. Anyone at all. We might get lucky and end up near enough to a planet to land. All I know is that anywhere is better than right here, because in about two days, here is going to be in there.” He nodded toward the black hole.

“Right. And, likewise. I’m only sorry that Sandy and I never... uh, you know.”

Tom ventured a guess. “Never got married?”

Bud let out a single laugh and replied. “Sure. Never got married is as good as any answer. Let’s go worm hunting!”

While Tom used much of their remaining fuel piloting them out against the gravity current searching for any wormhole nearby, Bud tried to work on his helmet. By putting the toe of his boot inside the visor and stepping down he managed to undo most of the dent in the back. He slid the helmet over his head. It fit.

Next he tried to do anything useful with the faceplate, but he knew it was in vain. Short of striking it with a sledge hammer, the clear tomasite as not going to move. Its magnetanium hinges were too twisted.

Nine hours later, Tom hadn’t been able to find anything stable enough to try to get in front of. Several possibilities had registered, but they went whizzing past on their way into the black hole.

All too soon he had to reduce power or risk not having enough for one final push. He had hoped that the black hole might reverse

directions again allowing them to escape. He also had been berating himself for not taking precautions enough to keep them from getting caught.

He spun the ship back facing the event horizon. There would be just enough fuel for one final turn if the opportunity to run presented itself.

If.

The hands were now all beckoning quickly to them. Both men could almost hear ghostly chanting. *Come to us. Come to us. Come to our protection. Come to us.*

An alarm went off and Tom quickly silenced it. It was the O₂ supply alarm. They now had no more oxygen other than what was in the cabin. It would last about fifty minutes. Things were not good. There would be no, "Oh, look. I found an extra air tank," surprises. There would be no rescue.

Still, the hands kept beckoning. Now, five were rapidly motioning to them to "Come" and the sixth one was stabbing a bony finger down as if pointing at the very source of their problems—the black hole.

"Want to play a final game of chicken, flyboy?" Tom asked.

"Do we have a chance to win?"

"That I do not know. But I do know that we have exactly two choices. Play their game—" he motioned toward the now frantic hands, "and see what happens in about fifty minutes, or sit here for an hour and not be conscious to see what happens anyway."

"Some choice. Okay. I probably should have gone to the bathroom before we left the house, but go for it."

Tom set the controls and they raced forward using the final reserves of their fuel. He ran the engines long enough to get them traveling at a rate sure to bring them into the hole in under thirty minutes. There was just enough left for one last five-second burst at full throttle. He wasn't sure why he was holding it back, but he was.

Tom was having difficulty catching his breath so he slipped his helmet on and looked at the readout.

Bud tried one final time to close his helmet. "Jetz! This stupid thing is so bent that I'll never get it closed," he said, giving up.

"Wouldn't make any difference for me," Tom gasped. "My O₂ tank is dead empty."

Bud groaned. "Don't use *that* word," he demanded through

clenched teeth.

The ghostly apparitions were gesturing more quickly now. The boys could believe there was a definite urgency being demonstrated in the hand motions.

"Are you ready?" Tom weakly asked his drawn and panting friend.

"Yeah. If you're asking if I'm ready to blow this popsicle stand and go home... yeah." Bud paused and took several deep breaths before continuing. "I don't want to be a Captain Bringdown, but did you leave a message for Bashalli? I mean, last night I recorded something for Sandy... uh... just in case—" His voice choked with emotion.

Tom reached a hand over and squeezed his best friend's forearm.

"I know. Yes. I did that a couple days ago when things started to look a little bleak. But, hey. We're gonna make it, flyboy. We always do."

Bud merely nodded.

"Bud. I'm going to try something. I don't know if it will help or not, but I'm going to try to use our wormhole opener to shoot an energy beam in front of us."

"Have we got the nuclear power?"

"We do and we might just as well expend it as have it blow up under our seats!"

"Okay. Hit the switch, professor."

Tom strained to reach out his right hand. As close as they were to the event horizon, the apparent gravity made it feel as if it weighed two hundred pounds. Slowly it inched forward until his wrist was resting on the control panel just below the switch.

Letting out a half scream and half grunt, he pushed his fingers forward and stabbed down. Done! He relaxed and his arm slammed down off the panel and into the side of his pneumatic seat. Tom knew that his hand had broken—searing pain shot up his arm—but there was nothing to do about it. Not now at least.

With a mighty growling sound that rapidly escalated into a whine so high-pitched that neither boy could hear anything else, the crippled ship shot forward and the energy built up behind them.

Tom took a worried look at the reactor readout. Even though it had been down almost to the point where it would be impossible to be building up like this... it was. The instruments continued to show

low power, yet the indicator for the energy beam was building at a speed faster than he could have imagined.

The generator reached its crescendo and the panel blinked readiness... and it happened.

Tom didn't remember having hit the switch, but just in front of them a small spiral galaxy appeared.

The anti-matter had somehow been ejected and caught in the energy beam.

The last thought he had as the ship was about to hit the energy burst floating above the inky black bubble of the black hole was, "This is how it must feel to slam an airliner into a mountain!"

Everything disappeared.

CHAPTER 20 /

TO SLEEP, PERCHANCE...

THERE WAS nothingness all around. No light, no sounds, no feelings. Nothing. It lasted a microsecond, or an eternity. There was nothing to measure. It simply *was*.

Or, was not.

A second, a minute, a day later a sensation seemed to be making itself evident. Where all around was a neutral warmth, there appeared to be a gathering... what? A *non* warmth? A lack of warmth? But, that meant something. Something else other than the warm lack of sensations.

No. If there is warmth, there is some feeling. And, this non warmth was cool. And spreading.

He tried to locate it but ran into a problem. He had no feeling and no sense of motion. He? Yes, *he*. He began remembering things. He was a he, not a... oh. A... uh... a she? Yes. That was it. A she. Not a she, a *he*.

But the coolness took charge of his gathering thoughts. Coolness on his... hmmm? Face. A coolness was spreading across his face. But, why? Everything was so nice and warm and there was no feeling except for the coolness that was invading his private world. It wasn't fair to feel warmth and comfort all around and then have this almost iciness on his face.

He wanted it to go away. Or, did he? *No!* he decided. *I do not want this feeling to go away. I want to know what it is.*

He began to desperately wish to know what the cold was and to know why it was taking over his face. As he struggled with these thoughts, another sensory intruder made itself known.

A not darkness was surrounding his face. Was that what made his face so cold? If so, he tried to will it away; he tried to return to the warmth and darkness.

But, there was something else now. Something in the middle of his head. To either side of his face, something else came into being. It was a strange sensation. It seemed to tickle. No. It was beyond the tickling. His mind began to gather speed as thoughts came more and more quickly. He realized that the tickling was a sensation. And, sensations meant feeling something. They meant life.

He was alive. How had he ever imagined otherwise? It was

puzzling.

The sensation split into two things. The first he realized was caused by movement of something across his ears. Something was oozing toward the back of his head. He hoped it was not something that was supposed to remain inside of him.

The second part began to get a little clearer to him.

Sound!

He strained to listen to the sound. Then, in a flash, it resolved itself into words.

"Tom? Can you hear me? Tom? Are you waking up?"

He tried to recognize the voice. It seemed familiar to him. But, as he tried to dredge up the memory a blinding flash of light hit his right eye.

"That's it, skipper. Flinch away from the light." The voice seemed to redirect itself away from his head. "Call the Swifts. Tell them that Tom is waking up. By the time they get over here he may be conscious."

Tom? That's me, he remembered. Tom..... Swift. Oh, god!!!

It all flooded back. The space voyage... the damage... the ghostly hands in front of them... the black hole!

His eyes flung open and he found himself staring into the face of Doc Simpson.

Tom wanted to say something but discovered that there was an object in his mouth. And throat. And, up his nose for that matter.

Doc rested a hand on the young man's chest. "You just lie back, Tom and let's get this suspension gel drained away and get you cleaned up. Okay?"

Tom found that he had some mobility. He slowly and carefully nodded once.

"Good man!" the young doctor told him. Tom's eyes looked toward the door in time to see several nurses and doctors come in.

"Is he awake?"

"How's he doing?"

"Can we examine him?"

Doc held up a hand. "Whoa there. I'll answer things one at a time. Yes, as you can see his eyes are open and he is awake. No, you can't all crowd in and examine him. Not right now. We need to finish getting him out of this nutritive ooze, cleaned off and

ready for his family to see him first. Oh, and I haven't the foggiest idea of how he is in total." Doc Simpson turned to look down at Tom. "You can hear and understand me?" he asked.

Tom nodded. His neck felt as if it was in a brace; the muscles were so tight he struggled to move them, but he did hear and understand the doctor.

"See?" Doc asked the seven other medical people in the room. "Now, scoot! All except for our beautiful Nurse Mackie. I'll need your assistance in getting our young charge into a real bed." Doc winked at Tom.

Tom found that his eyelids and eyes worked just fine, as did his mouth as it surrounded whatever was in it.

Five minutes later the medicos had him fully out of a pale blue gel in a coffin-sized Plexiglas tank. He had been cleaned off, wiped down with warm towels and put into a hospital gown and into bed. The sensation of full gravity felt both incredible as well as tiring. Having been suspended in the gel and in an induced coma had left the inventor's muscles weak.

In a raspy voice, Tom inquired, "How long?"

"Here? About two weeks. Out there... I've got no idea. Bud told us—"

"Bud!" Tom gasped. He had all but forgotten his best friend.

"Bud is fine. He's next door in another room. Came out of things a couple days ago. Must be that athlete's body of his." Doc smiled at Tom. "He tells an amazing story. If he's not loco, it appears that your two were out there for the better part of a month or more."

Tom nodded. "That's right," he rasped.

"Well, down here you were gone about six days is all I know. Surprised a lot of people getting back early."

Tom was genuinely shocked. *Six days? Impossible*, he thought. *Or, is it?* He was about to ask Doc a question when they both heard a noise in the hallway.

"I said," the strident voice of the chief nurse said loudly as the door opened, "you can't go in there! Now, get back out before I call Security!"

Damon and Anne Swift stood in the doorway. "Mind if we come in, Greg," she asked. Doc looked beyond them at the heavy-set nurse who appeared about to be ready to grab one or both of Tom's parents. "It's okay. Leave them alone," he told her. She

harrumphed and departed.

Doc filled them in on Tom's condition. Ever the mother, Anne Swift wanted to rush over to hold her son but she was restrained by her husband until the doctor had finished. Once released she strode over to the bed and took Tom's left hand in hers and kissed him on the forehead.

"Hey, Momsie," Tom said, his voice already sounding better than before. "See. All here and all better." He could see tears of joy welling up in here eyes. "Ah, cut that out, Mom. I've spent a couple weeks all wet. I'd rather be dry for now. Okay?"

She smiled, sniffled and wiped the tears away. "Okay. Promise."

Another noise from the hallway could be heard.

"If you don't get your large carcass out from in front of us I'll personally drag you over to that dirty linen hamper and shove you in!" The door flung open and Sandy and Bashalli were standing in the hall. "Can we come in?" Sandy asked, her voice now pleasant and soft.

Doc motioned them in. Bashalli rushed to Tom's side and hugged and kissed him. The Swifts and Doc Simpson stood back and gave her some time with the young man she had married just a few months ago. After two minutes, Doc put a hand on her shoulder. "Come up for some air, Bashalli," he commanded quietly.

"Bashi's been staying in your old room the past two nights since you and Bud went into the worm thing," Sandy told her brother. "And, while I love her for being the sister I always knew I wanted, I want you to get better, get home, and get her back to living with you!" She smiled at Bashalli and mouthed the words, *You know I love you*. Bashalli smiled, walked over and hugged her new sister-in-law, and then returned to her husband's side.

"Sandra and mother and father Swift have been so nice to me, Tom," she told him. "And, we've had my mother and father over for dinner. Even Moshan came along. He will be very happy that you are okay. I am!" She leaned forward and whispered, "He's in love with mother Swift's fried chicken!"

Doc suggested that everyone spend a few more minutes with the young inventor before leaving him alone to rest.

"Tomorrow, I'll have him moved in with Bud and you can all visit. I understand his folks are flying back again now that he is okay. Bud's parents had immediately flown out when they learned of his return and critical condition. They had departed a week

later but promised to come back in another week, or even sooner if Bud's condition changed.

"That's right. I talked with his father this morning. They are heading to the airport just about now," Damon told everyone.

A minute later only Tom and Doc Simpson remained. "Can you tell me how the heck you managed to get a full body scorching inside of a sealed and undamaged space suit?"

Tom tried to dredge up a memory, but it remained hidden. "Nope. I guess that's why the sleep in blue goo, huh?"

Once Doc departed, Tom lay back in his pillows and let sleep overcome him. His last conscious thought was, *It's amazing how sleepy I am given that I've been asleep for a couple weeks.*

By the following morning Tom felt almost as good as new. His voice had fully returned—the mechanisms in his mouth and nose designed to keep the nutritive gel out and oxygen in had irritated his throat—and his muscles were cooperating. In fact, the only three residual things were his badly broken right hand, a deep bruise on his chest from slamming forward into his harness, and an even larger bruise on his back where he had slammed backward into the pneumatic seat that had stiffened up as the ship entered the black hole.

Both bruises meant that his torso felt as if he had been on the losing end of a gang tackle in a pro football game.

He and Bud sat up in their respective beds joking and comparing mental notes. The flier had sustained substantially the same kinds of bruises and burns as his friend, but nothing had been broken. He had, however, suffered a concussion that would require a few extra quiet days once they were released from the hospital.

"When Sandy ran into the room after I woke up, she launched herself from the doorway and jumped onto the bed. Nearly made my head explode, but it was so nice to hold her," Bud related. "I hear that you got the 'smothered with kisses' treatment from Bashi," he teased his friend. "Oh, and by the way, she finally said yes. We're engaged!"

Tom grinned.

There was a knock on the door and it opened to reveal all four of the Swifts—including Mrs. Tom Swift—plus Bud's folks. A young nurse came in behind with the first of two wheelchairs that the boys soon transferred to so that they could 'go for a walk' with their families.

Tom wanted to tell his father all about their trip but the older inventor silenced him with a slight cough. "I think that you have better things to talk about than the trip," he chided his son. "Save it for when you come back to work next Monday."

"Speaking of next any day, what day is it?" Tom inquired.

"It is Thursday, the twenty-second. You and Bud went into the wormhole in the early morning hours on the first of the month and reappeared in lunar orbit on the evening of the sixth. But, enough about that. Doc tells us that you can come home—oops. I mean that you can *go* home to your wife and new house, on Saturday and then back to Enterprises on Monday." Before Tom could ask, Damon added, "Of course, that means the standard half days for a few and then we see what you can tolerate." He smiled at Tom and Tom returned it.

Bud's parents were overjoyed at the good condition of their son. So much so that Bud neglected to mention the bruises and concussion so they wouldn't worry.

"I do so worry about you, Budworth," his mother was telling him as the two wheelchair-bound friends came within hearing distance.

"I know, Mom," Bud told her. "But not to worry. I'm tough and young, and..." he looked from his mother to Sandy who was walking along side, holding his right hand, "and I'm in love with a beautiful girl. Did I tell you I'm getting married?"

Sandy squeezed his hand, then turned to Mrs. Barclay and said, "Assuming that Bud still means me, he will be allowed to live another day. Otherwise..." She gave Bud a meaningful little grin.

"Absolutely. Put away the thumbscrews and the boiling lead. I'm yours!"

Mrs. Barclay, who had long approved of Sandy Swift, gave the girl a sweet smile. "I'm grateful that we have you to keep Budworth in line, Sandra. Take him."

Sandy blushed. She fully intended to.

Bashalli and Sandy remained behind once the parents left an hour or so later. Sandy had crawled up onto Bud's bed and was snuggling with her head on his shoulder and Bashalli was sitting on the edge of Tom's bed, stroking his hair. Suddenly, she stopped.

"Thomas? Do you realize that you are in great need of a hair cut?"

Tom ran his fingers through his hair. It felt a full inch or more

longer than it should. It didn't seem right. After all, he had it trimmed just a day before he and Bud left—

"Hey, flyboy!" Tom called over to Bud. "Feel your hair and tell me what you think."

Bud stared at his friend, but then did as suggested. It took him a full minute to realize what Tom meant. "It's too long, skipper. Hey. That proves that we were gone for a month plus!"

Tom nodded.

By the time he returned to work a few days later, Tom was feeling almost one hundred percent. Even his hand was no longer hurting.

Damon Swift had called a group of seventeen key Enterprises' employees together to hear what Tom had to tell them about the trip. They had gathered in one of the larger conference rooms in the Administration building.

Tom began with a quick recap of what everyone already knew. "We launched from the *Sutter* a couple days later than originally planned. That turned out to be a good thing because the transition through the wormhole was like being tortured by a horde of angry Vikings. I wouldn't suggest it on anything less than a full night's sleep. The hole we found was about three times longer than the *Galaxy Traveler*, and we supposedly entered at a speed of several thousand miles per hour—not anything I'm anxious to repeat. The transition seemed to take many minutes, all of it extremely painful. We must have blacked out because I have to memory of exiting the other end."

The assembled group all nodded. Things had gone to plan up to that point.

Tom gave them an overview of what happened, and what they found.

"But, that's impossible!" declared a man Tom recognized as a Dr. Phipps, a research physicist currently on loan from NASA. "Matter spilling out? Did you and your friend suffer brain trauma or just take leave of your senses?" He snorted at the very idea of what Tom was telling them.

Seeing his father about to take the man to task, Tom quickly stated, "I assure you that we didn't suffer illusions or trauma or even bouts of drug-induced flights of fancy. We saw what we saw. And, once I can get back into shape and retrieve the remains of our *Galaxy Traveler* ship from its current lunar orbit I hope to have the data to prove what I am telling you all."

Dr. Phipps was opening his mouth to, no doubt, say something negative, so Tom hastened to add, "Until then I would hope that men and women of science would give me the benefit of the doubt. After all, I recall that you wrote a detailed paper regarding how manned flights to Mars were merely the results of 'fools and their foolish readers who subscribe to fantasy and science-less science fiction.' Wasn't that your wording?"

Looking about to see if others were going to laugh at him, Phipps reddened but rallied and stated, "The paper was written in earnest. Once positive proof was discovered I pulled that from further publication and recanted my statements."

"Which is, I believe you will find, precisely what Tom is asking of you, Doctor," Damon Swift said through clenched teeth. "Listen to him, give him the benefit of the doubt, and reserve your derision until actual proof positive or proof negative can be presented."

Tom told them all about their collisions and attempts to repair the ship. Many nodded as they recognized the futility of trying to repair something that complex with practically nothing. It was only as Tom related their experiences with the ghostly hands that appeared on their screens but not out of their view panes that everyone leaned forward.

"I have no idea what they were. Real? Apparitions? Mind games? I don't know, but we did get pictures."

Tom told them practically everything that had happened during the nearly six weeks since he and Bud had first arrived and had begun exploring the phenomena in front of them.

An hour later everyone left but not before requesting to see the photos and data.

Five days later and with Bud now cleared to accompany him, they took off from Fearing Island in the mighty *Challenger* heading for a rendezvous with their erstwhile dimensional jump ship.

On arrival in orbit parallel to the *Galaxy Traveler*, both could see the horrendous condition their ship was in.

"We survived that?" Bud asked incredulously. He pointed at the long, jagged rent in the hull of the ship beginning just behind the cockpit and ending at the tail of the ship. At its widest point it was open to the void by more than eight feet.

"Dad tells me that they discovered us in our seats with our suits closed and pressurized," Tom said looking carefully at Bud.

Bud's head slowly swung around. "Closed?"

Just as slowly, Tom nodded. "Yes. Closed, air tight and our O2 tanks were just under quarter full."

Bud obviously was trying to recall events. Tom waited.

"Uh, skipper? Remind me about my helmet and your tank."

"Well, if your memories are the same as mine, it seems that the jammed hinge on your helmet, uh, jiggled into a shut position, locking your faceplate and turning your air supply on. My air tank must have slipped backward into the refill station, then filled with oxygen that we didn't realize we still had."

They sat looking at each other in the large control room of the *Challenger*.

Finally, Bud nodded. "Yeah. That's how it must have happened."

After locking the controls to maintain position with the stranded craft, Tom and Bud went below and suited up. Too large to attempt to bring any portion inside, the damaged spaceship was pulled close to the "porch" area of the repelatron-powered super ship and lashed tight to the outer rails. The boys would bring it back toward Earth stopping near the outpost in space where it would be released, disassembled and transferred to the ground.

In the meantime, Tom and Bud floated into the interior of the ship and retrieved as much of the memory and electronics as they could.

"What do you think those hands were, skipper?" Bud asked with a slight shudder. "I mean, do you think we'll ever know?" He wanted to ask about their survival after plunging into the black hole, but thought better of it.

Tom pursed his lips. "First, I don't know. But, secondly, as soon as I figure out a few problems we're going back to investigate things. Now that we know what to expect, the next ship will be better suited for deep space explorations of all sorts!"

Back inside *Challenger*, Tom took the five large data bank cartridges and inserted them into the computer. Everything downloaded quickly and appeared to be in good condition. The data recorder with all of the ship's power and drive information would need to wait until they had it back at Enterprises.

After a good night's sleep Tom went to work scanning through all of the recorded visuals and audios from the data cartridges. His first discovery was that the cartridges, each one able to hold eight days' of continuous recording, were full. That boded well.

With dismay he fast forwarded through their wormhole traverse. It immediately became obvious that no recording took place during that time. However, the lack of data lasted for almost one hour of real time, so Tom made a note that the transition must have lasted that long.

A week later, Tom had the complete story from the retrieved data and recordings. He now had proof of the backward and forward running of the black hole.

As with their own experiences, the hands were visible to the camera pointed out of the view panes of the cockpit.

The hands that had finally convinced them to come closer.

The hands that finally convinced them to fly into the black hole.

Possibly the very physical force—or hands of the ghosts—who had, as they passed into the black hole, fixed and closed Bud's helmet and filled both of their oxygen tanks.

And fired off the last of their anti-matter.

That night Tom told Bashalli about the helmet and the tank.

She had been clearing the dinner table, but set the dishes down on the side table and climbed into Tom's lap. He could feel her warmth and put his arms as far around her as he could, eventually feeling his own shoulders with his fingertips.

"You are positive about your tank?" she asked. "I mean, perhaps the faceplate became unstuck and closed when you both were flung forward." She pulled her face away and looked into his eyes.

"Perhaps," he told her as she snuggled back into his chest. "Perhaps. The only problem then is my air tank. I looked at the valve yesterday. It is hopelessly twisted. It could never have been used to fill the tank."

A shudder went through his wife's body.

"Then, perhaps your ghosts knew how much I needed to have you back and they fixed it," she said.

Tom nodded. In his twenty-one years of life, stranger things *had* happened.

<•>—< End of Book >—<•>

